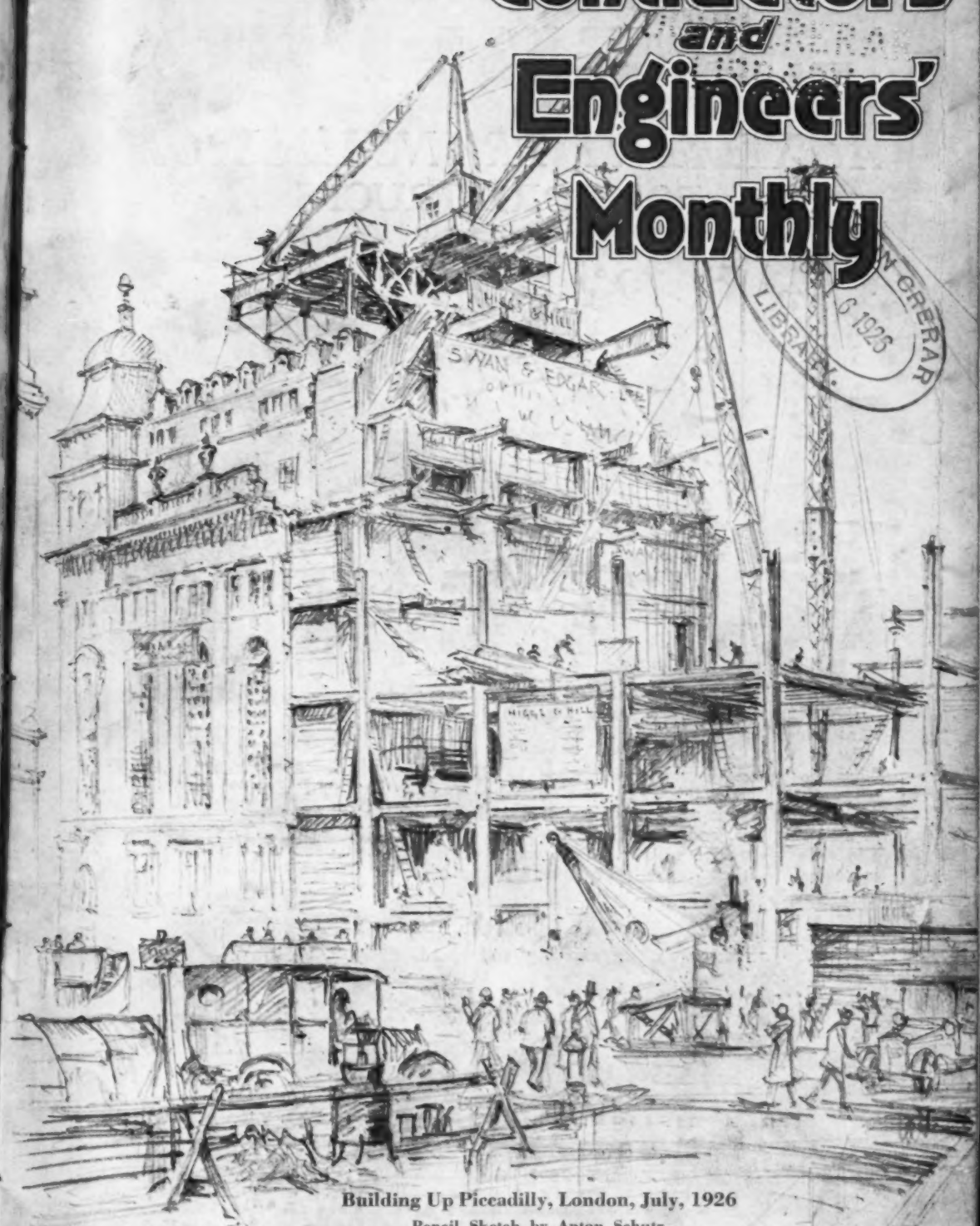


OCTOBER, 1926
25 Cents \$1 a Year

Contractors' and Engineers' Monthly

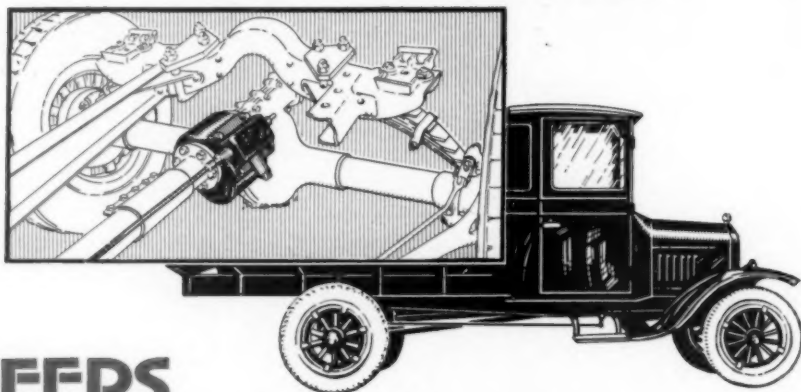


Building Up Piccadilly, London, July, 1926
Pencil Sketch by Anton Schutz

THE FULLER

AUXILIARY TRANSMISSION

FOR FORD TRUCKS



KEEPS THAT LINE OF STEEL UNBROKEN

On that sturdy line of steel connecting foot brake and rear wheels depends the safety of the Ford Truck and its driver.

That line of steel is kept unbroken when the FULLER is installed, because this unit has no neutral position. Its speed change is as fast and positive as the snap of a light switch, and the driver can shift with confidence, going uphill or down. To become stranded in neutral, with foot-brake inoperative, is impossible.

There's profit as well as satisfaction in using a device which safeguards both truck and driver, while effectually increasing hauling capacity and speed.

FULLER FEATURES

- Four Speeds Forward—Two Reverse.
- No Neutral Position (Ford Brakes Always Available).
- No Added Strain on Motor, Universal Joint, or Drive Shaft.
- No Rebuilding Necessary; No Cutting of Drive Shaft.
- Installation, 2 to 3 Hours; No Special Tools Needed.
- Very Simple and Easy to Operate.
- Built by Fuller; Largest Manufacturers of Truck and Bus Transmissions in the World.
- Fully Guaranteed for 90 Days Against All Defects.

PRICE \$6000 F. O. B. FACTORY
West of the Rockies, \$5.00 Additional

FULLER & SONS MFG., CO.

KALAMAZOO MICHIGAN
TRANSMISSION BUILDERS FOR 23 YEARS

Where to Purchase

A comprehensive classification of the leading machinery and supply manufacturers arranged for the convenience of contractors, engineers and public officials who may wish to secure information about construction equipment. The Index to Advertisers faces the inside back cover. When writing to advertisers please mention the **CONTRACTORS' & ENGINEERS' MONTHLY**. A star (*) before the manufacturer's name indicates that his advertisement appears in this issue.

This index is published as an aid to the reader, but the publishers assume no responsibility for errors or omissions.

AERIAL WIRE ROPE TRAMWAYS

Amer. Steel & Wire Co., Chicago
Broderick & Bascom Rope Co., St. Louis
A. Leschen & Sons Rope Co., St. Louis

AIR COMPRESSORS

*American Steam Pump Co., Battle Creek, Mich.
*Barnes Mfg. Co., Mansfield, O.
*Buhl Co., Chicago.
*Curtis Pa. Mch. Co., St. Louis, Mo.
*Domestic Eng. & Pump Co., Shippensburg, Pa.

*Ingersoll-Rand Co., N. Y.
*New Engine Co., Lansing, Mich.
*O. K. Clutch & Mach. Co., Columbia, Pa.
*Schramm, Inc., West Chester, Pa.
*Stover Mfg. & Eng. Co., Freeport, Ill.
*Sullivan Mch. Co., Chicago
*Allis-Chalmers Mfg. Co., Milwaukee, Chicago Pneumatic Tool Co., N. Y.
De Laval Stm. Turb. Co., Trenton, N. J.
Fairbanks, Morse & Co., Chicago.
Gardner Governor Co., Quincy, Ill.
General Elec. Co., Schenectady, N. Y.
Hardie-Tyres Mfg. Co., Birmingham, Ala.
Independent Pneum. Tool Co., Chicago
Nordberg Mfg. Co., Milwaukee.
Norwalk Ir. Wks. Co., So Norwalk, Ct.
United Iron Wks., Kans. City, Mo.
Westinghouse Trac. Brake Co., Wilmerding, Pa.
Worthington Pump & Mch. Corp., N. Y.

ARC LAMPS

General Elec. Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ARTESIAN WELL DRILLS & PUMPS

*Ingersoll-Rand Co., New York
Am. Well Works, Aurora, Ill.

ASBESTOS PRODUCTS

*Phillip Carey Co., Cincinnati.
Keasbey & Mattison Co., Ambler, Pa.
Mikesell Bros. Co., Wabash, Ind.
Norristown Mag. & Ash. Co., Norristown, Pa.
Sall Mountain Co., Chicago.

ASH HANDLING MACHINERY

*Bay City Dredge Wks., Bay City, Mich.
*Byrns Mach. Co., Ravenna, O.
*Chicago Automatic Conv. Co., Chicago
*Geo. Haiss Mfg. Co., N. Y.
*Mack Trucks, Inc., N. Y.
*Mead-Morrison Mfg. Co., E. Boston, Mass.
*Lakewood Eng. Co., Cleveland, O.
*Orton Crane & Shovel Co., Chicago
*Jas. B. Seaverns Co., Chicago
C. O. Barlett & Snow Co., Cleveland, O.

Brown Hoisting Mach. Co., Cleveland, O.

Chain Belt Co., Milwaukee, Wis.
Gifford-Wood Co., Hudson, N. Y.
Green Eng. Co., E. Chicago, Ind.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Co., Chicago.
Portable Mach. Co., Passaic, N. J.
Robins Conv. Belt Co., N. Y.
Webster Mfg. Co., Chicago.
Weller Mfg. Co., Chicago.

ASPHALT

*Barber Asphalt Co., Philadelphia.
*Barrett Co., N. Y.
*Ky. Rock Asph. Co., Louisville, Ky.
*Standard Oil Co. (Ind.), Chicago.
*Texas Co., N. Y.
*Warren Bros. Co., Boston.
Atlantic Ref. & Asph. Corp., Phila.
Gulf Refining Co., Pittsburgh
Headley Good Roads Co., Phila.
New Orleans Ref. Co., New Orleans.
Pioneer Asph. Co., Lawrenceville, Ill.
Sinclair Ref. Co., Chicago.
Standard Oil Co. of Cal., S. Francisco.
Standard Oil Co. of La., N. Orleans.
Standard Oil Co. of N. J., Newark.
Standard Oil Co. of N. Y., N. Y.

ASPHALT BLOCK

Hastings Pavement Co., N. Y.

ASPHALT CUTTERS

*Ingersoll-Rand Co., N. Y.
*Sullivan Machinery Co., Chicago.
Chicago Pneumatic Tool Co., N. Y.
Cleveland Rock Drill Co., Cleveland, O.
Dayton Pneum. Tool Co., Dayton, O.
Independent Pa. Tool Co., Aurora, Ill.

ASPHALT KETTLES (See Kettles for Asphalt and Tar Heating)

ASPHALT PLANTS, TOOLS, ETC.

*Aeroll Burner Co., Union Hill, N. J.
*Barber Asphalt Co., Philadelphia.
*Chausse Oil Burner Co., Elkhart, Ind.
*Littleford Bros., Cincinnati, O.
*Warren Bros. Co., Boston.
Edw. R. Bacon Co., S. Francisco.
Chase & Lyman, Boston.
F. D. Cummer & Son Co., Cleveland, O.
J. D. Faracey Co., Cleveland, O.
Hetherington & Berner, Indianapolis.
Mosher Mfg. Co., Chicago, Ill.

ASPHALT ROLLERS (See Road Rollers)

ASPHALT SURFACE HEATERS

*Aeroll Burner Co., Union Hill, N. J.
*Barber Asphalt Co., Philadelphia.
*Chausse Oil Burner Co., Goshen, Ind.
*Equitable Asp. Maint. Co., Kan. C. Mo.
*Hauck Mfg. Co., E'klyn, N. Y.

BACKFILLERS

*Am. Cem. Mch. Co., Inc., Keokuk, Ia.
*Baker Mfg. Co., Springfield, Ill.
*Bay City Dredge Wks., Bay City, Mich.
*Buckeye Trac. Ditcher Co., Findlay, O.
*Byrns Machine Co., Ravenna, O.
*Harnischfeger Corp., Milwaukee, Wis.
*Koehring Co., Milwaukee, Wis.
*Miami Trailer-Scraper Co., Troy, O.
*Orton Crane & Shovel Co., Chicago
*Speeder Mch. Corp., Fairfield, Ia.
Austin Mach. Corp., Muskegon, Mich.
Construction Mch. Co., Waterloo, Ia.
Ersted Mch. Mfg. Co., Portland, Ore.
Lesman Loader Mfg. Co., Des Moines
Parsons Co., Newton, Ia.
Weller Mfg. Co., Chicago.

BAR BENDERS AND CUTTERS

*Koehring Co., Milwaukee, Wis.
*Ransome Conc. Mch. Co., Dunellen, N.J.
Buffalo Forge Co., Buffalo, N. Y.
Concrete Steel Co., N. Y.
Electric Welding Co., Pittsburgh.
D. A. Hinman & Co., Sandwich, Ill.
J. L. Gleason & Co., Boston, Mass.
McKenna Co., Cleveland, O.

BAR CHAIRS, REINFORCING

*Truscon Steel Co., Youngstown, O.
Concrete Steel Co., N. Y.
Universal Form Clamp Co., Chicago

BAR TIES

*Bates Valve Bag Co., Chicago.

BATCH BOXES

*Easton Car & Const'n Co., Easton, Pa.
*Heitzel Stl. Form & Ir. Co., Warren, O.
*Lakewood Eng. Co., Cleveland, O.
*Jas. B. Seaverns Co., Chicago
Easton Car & Const'n Co. of Mo., Kansas City, Mo.
Western Wheeled Scraper Co., Aurora, Ill.

BEARINGS

Fafnir Bearing Co., New Britain, Conn.
Hyatt Roller Bear. Co., Harrison, N. J.
New Departure Mfg. Co., Bristol, Conn.
Timken Roller Bearing Co., Canton, O.

BINS, STORAGE

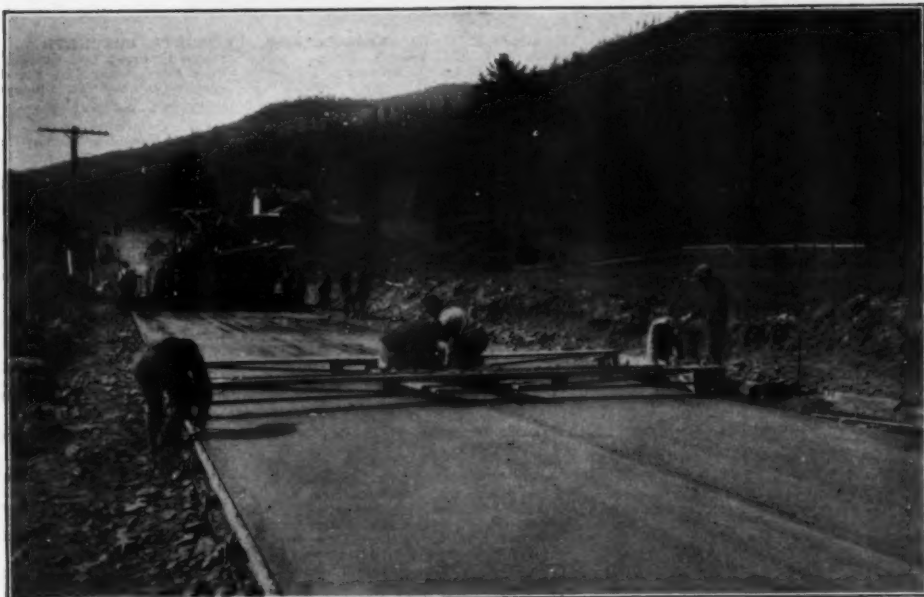
*Atlas Eng. Co., Milwaukee, Wis.
*Austin-Western Rd. Mach. Co., Chicago.
*Blaw-Knox Co., Pittsburgh, Pa.
*Easton Car & Const'n Co., Easton, Pa.
*Erie Steel Const. Co., Erie, Pa.
*Gallion Iron Wks. & Mfg. Co., Gallion, O.
*Good Roads Mch. Co., Kennett Sq., Pa.
*Heitzel Stl. Form & Ir. Co., Warren, O.
*Ransome Conc. Mch. Co., Dunellen, N.J.
*Russell Grader Mfg. Co., Minneapolis.

If you find any errors or omissions in this Where to Purchase list, please send corrections to
CONTRACTORS' & ENGINEERS' MONTHLY

Where to Purchase

- *Jas. B. Seaverns Co., Chicago
 *Universal Rd. Mach. Co., Kingston, N. Y.
 Austin Mfg. Co., Chicago.
 Birmingham Tank Co., Birmingham, Ala.
 Brown Hoisting Mch. Co., Cleveland.
 Fairfield Eng. Co., Marion, O.
 Link-Belt Co., Chicago.
 Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.
 Weller Mfg. Co., Chicago.
- BLAST HOLE DRILLING MACHINES**
 (See "Well Drilling and Blast Hole Machines")
- BLASTING POWDER** (See Explosives)
- BLOCKS AND TACKLE**
 *Boston & Lockport Rk. Co., E. Boston, Mass.
 *Dobbie Fdry. & Mach. Co., Niagara Falls, N. Y.
 *Western Block Co., Lockport, N. Y.
 Upson-Walton Co., Cleveland, O.
- BLUE PRINT MACHINES**
 Paragon Mach. Co., Rochester, N. Y.
 C. F. Pease Co., Chicago.
 Wickes Bros., Saginaw, Mich.
- BOILERS**
 *S. Flory Mfg. Co., Bangor, Pa.
 *Johnston Bros., Inc., Ferrysburg, Mich.
 Chandler & Taylor Co., Indianapolis.
 Chatta. Boiler & Tank Co., Chatta., Tenn.
 R. D. Cole Mfg. Co., Newnan, Ga.
 Erie City Iron Wks., Erie, Pa.
 Hartley Bkr. Wks., Montgomery, Ala.
 Heine Boiler Co., St. Louis, Mo.
 E. Keeler Co., Williamsport, Pa.
 Ladd Water Tube Bkr. Co., P'tsb'gh, Pa.
 V. Lafel & Co., Springfield, O.
 Lord & Burnham Co., Irvington, N.Y.
 Murray Iron Wks. Co., Burlington, Ia.
 Nagle Eng. & Bkr. Wks., Erie, Pa.
 New Bern Iron Wks. & Sup. Co., New Bern, N. C.
 Petroleum Iron Wks. Co., Sharon, Pa.
 J. S. Schofield's Sons Co., Macon, Ga.
 Stanwood Corp., Cincinnati, O.
 Superior Body Corp., Marion, Ind.
 Traylor Eng. & Mfg. Co., Allentown, Pa.
 Valk & Murdock Co., Charleston, S. C.
 Vogt Mch. Co., Inc., Louisville, Ky.
 Walsh & Weldner Bkr. Co., Chattanooga, Tenn.
- BRACES, TRENCH**
 Jas. H. Channon Mfg. Co., Chicago.
 Duff Mfg. Co., Pittsburgh, Pa.
 Kalamazoo Fdry. & Mach. Co., Kalamazoo, Mich.
 Waldo Bros. & Bond Co., Boston.
- BRANDING TOOLS**
 *Everhet Mfg. Co., Maywood, Ill.
- BRASS GOODS**
 *Union Water Meter Co., Worcester, Mass.
 Glauber Brass Mfg. Co., Cleveland, O.
 Haydenville Co., Haydenville, Mass.
 Hays Mfg. Co., Erie, Pa.
 Mueller Company, Decatur, Ill.
 United Brass Mfg. Co., Cleveland, O.
- BREAKERS, CONCRETE**
 *Buckeye Trac. Ditcher Co., Findlay, O.
 *Hardcocks Wonder Drill Co., Ottumwa, Ia.
 *Ingersoll-Rand Co., N. Y.
 Chicago Pneumatic Tool Co., N. Y.
 Cleveland Rock Drill Co., Cleveland, O.
- BRICK, PAVING** (See Paving Brick)
- BRIDGES AND BUILDINGS, STEEL**
 *Blaw-Knox Co., Pittsburgh, Pa.
 *Russell Grader Mfg. Co., Minneapolis.
 *Frederick Snares Corporation, N. Y.
 Amer. Bridge Co., N. Y.
 Bellefontaine Br. & Stil. Co., Bellefontaine, O.
 Belmont Iron Wks., Phila.
- Berlin Constr. Co., Berlin, Conn.
 Bethlehem Steel Co., Bethlehem, Pa.
 Boston Bridge Wks., Boston.
 Central States Br. Co., Indianapolis, Ind.
 Champion Bridge Co., Wilmington, O.
 Chesapeake Ir. Wks., Baltimore, Md.
 Chicago Br. & I. Wks., Chicago.
 Clinton Bridge Wks., Clinton, Ia.
 Eastern Bridge & Struc. Co., Worcester, Mass.
 Flour City Orn. Iron Co., Minneapolis.
 Fort Pitt Br. Wks., Pittsburgh, Pa.
 Ingalls Ir. Wks. Co., Birmingham, Ala.
 Inter. Stil. & Ir. Co., Evansville, Ind.
 Louisville Br. & Ir. Co., Louisville, Ky.
 McClintic Marshall Co., Pittsburgh, Pa.
 Milwaukee Br. Co., Milwaukee, Wis.
 Minn. Stil. & Mch. Co., Minneapolis.
 Missouri Vy. Br. & Ir. Co., Leavenworth, Kan.
 Morava Constr. Co., Chicago.
 Mt. Vernon Br. Co., Mt. Vernon, O.
 Penn. Bridge Co., Beaver Falls, Pa.
 Pittsburgh-Des Moines Stil. Co., Pittsburgh, Pa.
 Richmond Struc. Stil. Co., Richmond, Va.
 Riverside Br. Co., Martins Ferry, O.
 Virginia Br. & Ir. Co., Roanoke, Va.
 Wise Br. & Ir. Co., No. Milwaukee, Wis.
- BRONZE TABLETS**
 Flour City Orn. Ir. Co., Minneapolis.
 Imperial Brass Mfg. Co., Chicago.
 J. L. Mott Iron Wks., N. Y.
- BROOMS** (See Street Sweeping Brooms)
- BUCKETS, AUTOMATIC DUMPING**
 *Lakewood Eng. Co., Cleveland, O.
 *Littleford Bros., Cincinnati, O.
 *Union Iron Wks., Inc., Hoboken, N. J.
 G. L. Steubner Ir. Wks., Inc., Long Island City, N. Y.
- BUCKETS, CLAM SHELL**
 *Blaw-Knox Co., Pittsburgh, Pa.
 *Erie Steel Const'n Co., Erie, Pa.
 *Geo. Haiss Mfg. Co., N. Y.
 *J. F. Kessler Co., Chicago.
 *Lakewood Eng. Co., Cleveland, O.
 *Mead-Morrison Mfg. Co., E. Boston, Mass.
 *Orton Crane & Shovel Co., Chicago
 Brown Hoisting Mach. Co., Cleveland, O.
 Browning Crane Co., Cleveland, O.
 F. A. Coleman Co., Cleveland, O.
 Hayward Co., N. Y.
 Industrial Wks., Bay City, Mich.
 Link-Belt Co., Chicago.
 McMyler Interstate Co., Cleveland, O.
 Owen Bucket Co., Cleveland, O.
 G. H. Williams Co., Erie, Pa.
- BUCKETS, CONCRETE**
 *Insley Mfg. Co., Indianapolis, Ind.
 *Koppel Ind. Car & Equip. Co., Koppel, Pa.
 *Lakewood Eng. Co., Cleveland, O.
 *Ransome Conc. Mch. Co., Dunellen, N. J.
 *Union Iron Works, Inc., Hoboken, N. J.
 G. L. Steubner Ir. Wks., Inc., Long Island City, N. Y.
- BUCKETS, DRAGLINE**
 *Dobbie Fdry. & Mch. Co., Niagara Falls, N. Y.
 *Gallion Ir. Wks. & Mfg. Co., Gallion, O.
 *Russell Grader Mfg. Co., Minneapolis.
 *Sauerman Bros., Chicago.
 Am. Mfg. & Eng. Co., Kalamazoo, Mich.
 Page Eng. Co., Chicago.
 Pioneer Bucket Co., Indianapolis, Ind.
 Schofield-Burkett Const'n Co., Macon, Ga.
- BUCKETS, DREDGING AND EXCAVATING**
 *Blaw-Knox Co., Pittsburgh, Pa.
 *Geo. Haiss Mfg. Co., N. Y.
 *J. F. Kessler Co., Chicago.
 *Lakewood Eng. Co., Cleveland, O.
 *Mead-Morrison Mfg. Co., E. Boston, Mass.
- *Orton Crane & Shovel Co., Chicago
 Brown Hoisting Mach. Co., Cleveland, O.
 Browning Crane Co., N. Y.
 Owen Bucket Co., Cleveland, O.
 G. H. Williams Co., Erie, Pa.
- BUCKETS, ORANGE PEEL**
 *J. F. Kessler Co., Chicago.
 *Mead-Morrison Mfg. Co., E. Boston, Mass.
 *Orton Crane & Shovel Co., Chicago
 Hayward Co., N. Y.
 Industrial Wks., Bay City, Mich.
 McMyler Interstate Co., Cleveland, O.
- BUILDINGS, STEEL** (See Bridges)
- BUNKS AND COTS**
 Ft. Pitt Bedding Co., Pittsburgh, Pa.
 Haggard & Marcusson Co., Chicago.
 Southern Home Co., Baltimore, Md.
- CABLES** (See Wire and Cables)
- CABLEWAY, DRAGLINE**
 *Mead-Morrison Mfg. Co., E. Boston, Mass.
 *Russell Grader Mfg. Co., Minneapolis.
 *Sauerman Bros., Chicago
 *Street Bros. Mach. Wks., Chattanooga
 Schofield-Burkett Const'n Co., Macon, Ga.
- CARS FOR MOTOR TRUCKS**
 Highland Body Mfg. Co., Cincinnati, O.
 Weatherproof Body Corp., Corvallis, Mich.
- CAISSONS**
 American Bridge Co., N. Y.
 Birmingham Tank Co., Birmingham, Ala.
 Foundation Co., N. Y.
 Bethlehem Steel Co., Bethlehem, Pa.
 O'Rourke Eng. Constr. Co., N. Y.
 Petroleum Ir. Wks. Co., Sharon, Pa.
- CALCIUM CHLORIDE FOR ROADS**
 *Dew Chemical Co., Midland, Mich.
 *Solvay Process Co., Syracuse, N. Y.
 Carbondale Calcium Co., Carbondale, Pa.
- CANS FOR GARBAGE AND REFUSE**
 American Can Co., N. Y.
 Butler Mfg. Co., Minneapolis.
 Economy Baler Co., Ann Arbor, Mich.
 Rochester Can Co., Rochester, N. Y.
 Solar-Sturges Mfg. Co., Chicago.
 Steel Basket Co., Cedar Rapids, Ia.
- CAR UNLOADERS** (See "Loaders")
- CARS, INDUSTRIAL V. DUMPING**
 *Easton Car & Const. Co., Easton, Pa.
 *Insley Mfg. Co., Indianapolis, Ind.
 *Koppel Ind. Car & Equip. Co., Koppel, Pa.
 *Lakewood Eng. Co., Cleveland, O.
 Atlas Car & Mfg. Co., Cleveland, O.
 Austin Mach. Corp., Muskegon, Mich.
 Chase Fdry. & Mfg. Co., Columbus, O.
 G. L. Steubner Ir. Wks., Inc., Long Island City, N. Y.
 O. W. Hunt Co., W. New Brighton, N. Y.
 United Ir. Wks., Inc., Kan. City, Mo.
 Weller Mfg. Co., Chicago.
 Whiting Corp., Harvey, Ill.
- CARTS, CONCRETE**
 *Akron Barrow Co., Cleveland, O.
 *Easton Car & Const. Co., Easton, Pa.
 *Insley Mfg. Co., Indianapolis, Ind.
 *Jackson Mfg. Co., Harrisburg, Pa.
 *Lakewood Eng. Co., Cleveland, O.
 *Lansing Co., Lansing, Mich.
 *Littleford Bros., Cincinnati, O.
 *Ransome Conc. Mch. Co., Dunellen, N.J.
 *T. L. Smith Co., Milwaukee.
 *Toledo Wheelbarrow Co., Toledo, O.
 Chattanooga Wheelbarrow Co., Chattanooga, Tenn.
 Cleveland Wheelbarrow Co., Cleveland, O.
 E. D. Etnyre & Co., Oregon, Ill.
 Gray Iron Fdry. Co., Reading, Pa.
 Lee Trailer & Body Co., Chicago.
 Sterling Wheelbarrow Co., Milwaukee

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*



Permanent Roads

Truscon Products for reinforcing concrete roads and pavements add materially to their life and cut down maintenance cost.

Truscon Wire Mesh, the permanent building steel—more economical than additional thicknesses of concrete. Truscon Contracting Joints to prevent the formation of irregular cracks. Truscon Rib Bars for reinforcement. Truscon Curb Bars for protection. Truscon Road Forms for speed and economy of construction.

See our exhibit, American Road Show in Chicago, January, 1927.

TRUSCON STEEL COMPANY,
YOUNGSTOWN, OHIO

Warehouses and Offices in all Principal Cities.

TRUSCON

HIGHWAY PRODUCTS

NOW IN PREPARATION

New and enlarged edition of Truscon Handbook "Modern Road Construction." Send in your name now and receive free copy when published.

Where to Purchase

CAST IRON PIPE (See Pipe, Cast Iron)

CASTINGS, STREET AND SEWER

*Burch Flow Wks. Co., Crestline, O.
 *Gallion Ir. Wks. & Mfg. Co., Gallion, O.
 *U. S. Cast Ir. Pipe & Fdry. Co., Burlington, N. J.
 Canton Fdry. & Mach. Co., Canton, O.
 Casey-Hedges Co., Chattanooga, Tenn.
 Central Fdry. Co., N. Y.
 J. B. Clow & Sons, Chicago.
 W. E. Dee Co., Chicago.
 Elkhart Fdry. & Mach. Co., Elkhart, Ind.

Foundry Mfg. Co., St. Albans, Vt.
 Gilbert Mfg. Co., Aberdeen, S. Dak.
 Klauer Mfg. Co., Dubuque, Ia.
 Madison Fdry. Co., Cleveland, O.
 Pechstein Iron Works, Keokuk, Ia.
 Portable Mach. Co., Passaic, N. J.
 Sessions Foundry Co., Bristol, Conn.
 South Bend Fdry. Co., So. Bend, Ind.

CATCH BASINS (See Castings, Street)

CATCH BASIN CLEANING OUTFITS

*Mack Trucks, Inc., N. Y.
 Elgin Sales Corp., N. Y.
 Movakan Co., Indianapolis, Ind.

CAULKING MACHINERY AND TOOLS

*Ingersoll-Rand Co., N. Y.
 Cleveland Rock Drill Co., Cleveland, O.
 Helwig Mfg. Co., St. Paul, Minn.
 Mueller Company, Decatur, Ill.

CEILINGS, METAL

Berger Mfg. Co., Canton, O.
 Canton Art Metal Co., Canton, O.
 Globe Iron Roofing & Cor. Co., Cincinnati, O.
 Newport Rolling Mill Co., Newport, Ky.
 Klauer Mfg. Co., Dubuque, Ia.
 Geo. L. Meeker & Co., Evansville, Ind.
 Milwaukee Corr. Co., Milwaukee.
 Wheeling Corr. Co., Wheeling, W. Va.

CEMENT (P. C. stands for Portland Cement)

*Pennsylvania Cement Co., N. Y.
 Acme Cement Corp., Catskill, N. Y.
 Aetna P. C. Co., Detroit, Mich.
 Alabama P. C. Co., Birmingham, Ala.
 Allentown P. C. Co., Allentown, Pa.
 Alpha P. C. Co., Easton, Pa.
 Ash Grove Lime and P. C. Co., Kansas City, Mo.
 Atlas P. C. Co., N. Y.
 Beaver P. C. Co., Portland, Ore.
 Bessemer Limestone & C. Co., Youngstown, O.
 British Col. Cement Co., Victoria, B. C.
 Canada Cement Co., Ltd., Montreal, Canada.
 Clinchfield P. C. Corp., Kingsport, Tenn.
 Colorado P. C. Co., Denver, Colo.
 Cowell P. C. Co., Cowell, Cal.
 Crescent P. C. Co., Wampum, Pa.
 Dewey P. C. Co., Kansas City, Mo.
 Dexter P. C. Co., Nazareth, Pa.
 Diamond P. C. Co., Cleveland, O.
 Dixie P. C. Co., Chattanooga, Tenn.
 Edison P. C. Co., N. Y.
 Georgia Cement & Stone Co., Birmingham, Ala.
 Giant P. C. Co., Philadelphia, Pa.
 Glens Falls P. C. Co., Glens Falls, N. Y.
 Golden State P. C. Co., Los Angeles, Cal.
 Great West'n P. C. Co., Kansas City, Mo.
 Hawkeye P. C. Co., Des Moines, Ia.
 Hercules Cement Corp., Philadelphia.

Hermitage P. C. Co., Nashville, Tenn.
 Huron P. C. Co., Detroit, Mich.
 Indiana P. C. Co., Indianapolis, Ind.
 International Cement Corp., N. Y.
 International P. C. Co., Ltd., Spokane, Wash.

Kansas P. C. Co., Kansas City, Mo.
 Knickerbocker P. C. Co., Inc., N. Y.
 Kosmos P. C. Co., Louisville, Ky.
 La Tolteca Compania de Cemento Portland, Mexico City, Mex.
 Lawrence P. C. Co., Northampton, Pa.
 Lehigh P. C. Co., Allentown, Pa.
 Louisville Cement Co., Louisville, Ky.
 Manitowoc P. C. Co., Manitowoc, Wis.
 Marlboro Cement Co., Edmonton, Can.
 Marquette Cement Mfg. Co., Chicago.
 Missouri P. C. Co., St. Louis, Mo.
 Monarch Cement Co., Humboldt, Kan.
 Monolith P. C. Co., Los Angeles, Cal.
 National Cement Co., Birmingham, Ala.
 Nazareth Cement Co., Nazareth, Pa.
 Nebraska Cement Co., Denver, Colo.
 Newago P. C. Co., Newago, Mich.
 New Egyptian P. C. Co., Detroit.
 North Amer. Cement Corp., Albany.
 Northwestern States P. C. Co., Mason City, Ia.

Oklahoma P. C. Co., Denver.
 Olympic P. C. Co., Ltd., Seattle.
 Oregon P. C. Co., Portland, Ore.
 Pacific P. C. Co., San Francisco.
 Peerless P. C. Co., Union City, Mich.
 Peninsula P. C. Co., Cement City, Mich.
 Penn-Allen Cement Co., Allentown, Pa.
 Petoskey P. C. Co., Petoskey, Mich.
 Phoenix P. C. Co., Nazareth, Pa.
 Pgh. Plate Glass Co., Pittsburgh, Pa.
 P. C. Co. of Utah, Salt Lake City.
 Pyramid P. C. Co., Des Moines.
 Riverside P. C. Co., Los Angeles.
 St. Marys Cement Co., Toronto, Can.
 San Antonio P. C. Co., San Antonio.
 Sandusky Cement Co., Cleveland, O.
 Santa Cruz P. C. Co., San Francisco.
 Signal Mountain P. C. Co., Chattanooga, Tenn.
 Southern States P. C. Co., Rockport, Ga.
 Southwest'n P. C. Co., El Paso, Tex.
 Sun P. C. Co., Portland, Ore.
 Superior P. C. Co., Seattle, Wash.
 Texas P. C. Co., Dallas, Tex.
 Three Forks P. C. Co., Denver, Colo.
 Tidewater P. C. Co., Baltimore, Md.
 Trinity P. C. Co., Dallas, Tex.
 Union P. C. Co., Ogden, Utah.
 U. S. P. C. Co., Denver, Colo.
 Universal P. C. Co., Chicago.
 Utah Idaho Cement Co., Ogden, Utah.
 Vulcanite P. C. Co., Philadelphia.
 Wabash P. C. Co., Detroit.
 Wolverine P. C. Co., Coldwater, Mich.
 Wyandotte P. C. Co., Detroit.

CEMENT BLOCK MACHINES

*Cement Block Mach. Co., Newark, N. J.

CEMENT GUNS

Cement Gun Co., Allentown, Pa.

CEMENT INSPECTION (See Inspecting Laboratories)

CEMENT TOOLS

*Abrams Cement Tool Co., Detroit

CENTRIFUGAL PUMPS (See "Pumps, Centrifugal")

CHAINS

Amer. Chain Co., Inc., Bridgeport, Conn.
 Chain Belt Co., Milwaukee, Wis.
 Columbus McKinnon Chain Co., Columbus, O.
 Diamond Chain & Mfg. Co., Indianapolis, Ind.
 Jeffrey Mfg. Co., Columbus, O.
 Link-Belt Co., Chicago
 U. S. Chain & Forge Co., Pittsburgh, Pa.
 Webster Mfg. Co., Chicago
 Weller Mfg. Co., Chicago

CHIMNEYS, CONCRETE

Heine Chimney Co., Chicago
 Rust Engineering Co., Pittsburgh, Pa.
 Weber Chimney Co., Chicago

CHIMNEYS, RADIAL BRICK

Amer. Chimney Corp., N. Y.
 Alphons Castodia Chimney Const. Co., N. Y.
 Continental Chimney Co. of Chi., Chicago
 Heine Chimney Co., Chicago
 H. R. Heinicke, Inc., Indianapolis, Ind.
 M. W. Kellogg & Co., N. Y.
 Rust Eng. Co., Pittsburgh, Pa.

CHIMNEYS, STEEL (See Stacks, Steel)

CHLORINATORS

*Wallace & Tiernan Co., Inc., Newark, N. J.

CHLORINE, LIQUID

(See Liquid Chlorine)

CHUTES, CONCRETE

*Insley Mfg. Co., Indianapolis, Ind.
 *Lakewood Eng. Co., Cleveland, O.
 *Ransome Conc. Mch. Co., Danville, N. J.

CLIPS, WIRE ROPE

Amer. Hoist & Derrick Co., St. Paul, Minn.
 Fischer & Hayes Rope & Steel Co., Chicago
 Thos. Laughlin Co., Portland, Me.
 Marion Malleable Ir. Wks., Marion, Ind.
 C. M. Mockbee & Co., Cincinnati, O.
 John A. Roebing Sons Co., Trenton, N. J.
 Upson-Walton Co., Cleveland, O.

CLUTCHES

*Twin Disc Clutch Co., Racine, Wis.
 *Waukesha Motor Co., Waukesha, Wis.

COAL AND ORE CONVEYING MCHY.

*Barber-Greene Co., Aurora, Ill.
 *Good Roads Machy. Co., Kennett Sq., Pa.
 *Chicago Automatic Conv. Co., Chicago
 *Geo. Haisse Mfg. Co., N. Y.
 *Mead-Morrison Mfg. Co., E. Boston, Mass.
 *Jas. B. Seaverns Co., Chicago
 C. O. Bartlett & Snow Co., Cleveland, O.
 Brown Hoisting Mch. Co., Cleveland, O.
 Chain Belt Co., Milwaukee, Wis.
 Fairfield Eng. Co., Marion, O.
 Gifford-Wood Co., Hudson, N. Y.
 C. W. Hunt Co., Inc., W. New Brighton, N. Y.
 Jeffrey Mfg. Co., Columbus, O.
 Lindenwood Mfg. Co., N. Y.
 Link-Belt Co., Chicago.
 Portable Machinery Co., Passaic, N. J.
 Robins Conv. Belt Co., N. Y.
 Webster Mfg. Co., Chicago
 Weller Mfg. Co., Chicago.

COCKS, CURE AND CORPORATION

*Union Wtr. Mtr. Co., Worcester, Mass.
 Chapman Valve Mfg. Co., Indian Orchard, Mass.
 Glauber Brass Mfg. Co., Cleveland, O.
 Haydenville Co., Haydenville, Mass.
 Hays Mfg. Co., Erie, Pa.
 Mueller Co., Decatur, Ill.

COLLAPSIBLE HORSES

Taylor Collapsible Horse Co., Chicago

COLUMN CLAMPS

*Insley Mfg. Co., Indianapolis, Ind.
 M. & M. Wire Clamp Co., Minneapolis
 The O. D. G. Co., Owensboro, Ky.
 Victor L. Phillips Co., Kansas City, Mo.
 Sterling Wheelbarrow Co., Milwaukee.
 Symons Clamp & Mfg. Co., Chicago.
 Universal Form Clamp Co., Chicago

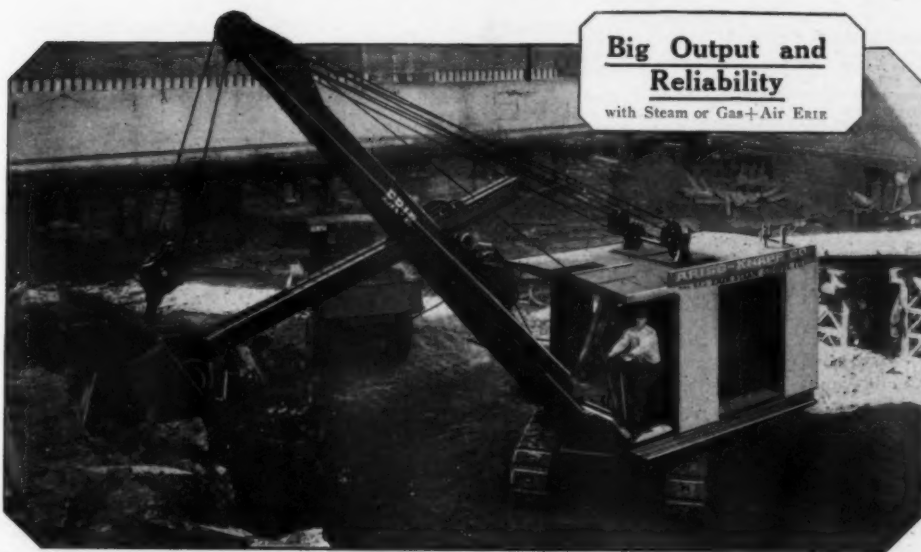
COMPRESSORS, AIR (See Air Compressors)

CONCRETE BLOCK MACHINES (See Cement Block Machines)

CONCRETE FLOOR HARDENER

Anti-Hydro Waterproofing Co., Newark, N. J.

If you find any errors or omissions in this Where to Purchase list, please send corrections to
 CONTRACTORS' & ENGINEERS' MONTHLY



**"Gas+Air ERIE has more power for the tough digging—
and our operator likes it better every day."**

**"The ERIE is lowest in
upkeep cost"**

Every time a contractor writes that the ERIE has proved to be "lowest in upkeep cost," you have more evidence of the ERIE's unequalled reliability. For instance, this report:

"Our ERIE is working as a crane excavating for sewers and water mains; have also used this ERIE as a shovel on street grading. We are operating three different makes of machines, and the ERIE is the lowest in upkeep cost." *B. F. Perry, E. & W. McShaffery Co., Akron, Ohio.*

The B-2 ERIE "Dreadnaught" has even more strength and more power than past ERIES—owners tell us it is the best Steam ERIE ever built.



"We have used the Gas+Air ERIE on most of our work to test it. On three or four tough jobs we encountered pretty stiff shale rock — and in every instance we found the Gas+Air ERIE would develop more power and dig the material more rapidly. Our operator likes it better every day."—*B. W. Ariss, Pres., Ariss-Knapp Co., Oakland, Calif.*

Numerous REPEAT ORDERS are coming in from contractors who have found that this gas shovel *digs much more*.

It works with the speed of an ERIE Steam Shovel—and with exactly the same perfect control over the dipper.

Can dig harder materials: The full power of the big 4-cylinder gasoline engine, direct-connected for hoisting, can be used *at the same time* the direct-connected air engines are exerting full power for crowding and swinging.

It is reliable: No reversing frictions on the hoist, crowd or swing. All direct drive.

If your work calls for a gasoline shovel, it will pay you to go and see a Gas + Air ERIE at work on the job.

ERIE STEAM SHOVEL CO., Erie, Pa., U. S. A.

Branch Offices: Boston, New York, Philadelphia, Pittsburgh, Atlanta, Chicago
Representatives throughout the U. S. A.

GAS+AIR^{and Steam} ERIE DREADNAUGHT
SHOVELS, CRANES, DRAGLINES, TRENCH HOES, ETC.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

General Chemical Co., N. Y.
General Firepr. Co., Youngstown, O.
Graniter Corp., N. Y.
A. G. Horn Co., L. I. City, N. Y.
Master Builders Co., Cleveland, O.
L. Sonneborn Sons, Inc., N. Y.
Truscon Laboratories, Detroit.

CONCRETE HEATERS

*Asroll Burner Co., Union Hill, N. J.
*Chascoe Oil Burner Co., Elkhart, Ind.
*Hauk Mfg. Co., Brooklyn, N. Y.
*Alex. Milburn Co., Baltimore, Md.

CONCRETE MIXERS

*Amer. Con. Mch. Co., Inc., Kookuk, Ia.
*Atlas Eng. Co., Milwaukee, Wis.
*Kiel Mch. Co., Kiel, Wis.
*Kochring Co., Milwaukee, Wis.
*Lakewood Eng. Co., Cleveland, O.
*Lansing Co., Lansing, Mich.
*Ransome Gen. Mch. Co., Dunellen, N. J.
*Schramm, Inc., West Chester, Pa.
*T. L. Smith Co., Milwaukee, Wis.
*Standard Scale & Supply Co., Pittsburgh
Badger Con. Mixer Co., Milwaukee
Chain Belt Co., Milwaukee
Construction Mch. Co., Waterloo, Ia.
B. M. Croy Co., Chicago
The Fote Co., Manda, N. Y.
J. B. Fote Fdry. Co., Fredericktown, O.
Gray Iron Fdry. Co., Reading, Pa.
Jaeger Mch. Co., Columbus, O.
Judy Mfg. Co., Centerville, Ia.
Knickerbocker Co., Jackson, Mich.
Kwik-Mix Con. Mixer Co., Port Wash-
ington, Wis.
Leach Co., Oshkosh, Wis.
Marsh-Capron Co., Chicago
Milwaukee Conc. Mixer Co., Milwaukee
Raber & Lang Mfg. Co., Kendallville,
Ind.
Rommel Mfg. Co., Kewaunee, Wis.
Republic Ir. Wks. Tecumseh, Mich.

CONCRETE PILING (See Piling)

CONCRETE PIPE (See Pipe, Concrete)

CONCRETE REINFORCEMENT

*Truscon Steel Co., Youngstown, O.
*American Steel & Wire Co., Chicago
*Bethlehem Steel Co., Bethlehem, Pa.
*Carnegie Steel Co., Pittsburgh, Pa.
*Concrete Steel Co., N. Y.
*Consolidated Exp. Metal Co., Braddock,
Pa.
*Electric Welding Co., Pittsburgh, Pa.
*Ft. Pitt Bridge Wks., Pittsburgh, Pa.
*General Fireproofing Co., Youngstown, O.
*Inland Steel Co., Chicago
*Kalmag Steel Co., Chicago
*Lacoste Steel Co., St. Louis, Mo.
*National Steel Fabric Co., Pittsburgh
*J. T. Ryerson & Son, Chicago
*Wickwire-Spencer Steel Co., N. Y.
*Youngstown Pressed Steel Co., War-
ren, O.
*Youngstown Sheet & Tube Co., Youngs-
town, O.

CONCRETE ROAD FINISHERS

*Kelsall Sil. Form & Iron Co., Warren, O.
*Lakewood Eng. Co., Cleveland, O.
*Dunn Road Mach. Co., Connecticut, O.
*A. W. French & Co., Chicago

CONCRETE SURFACING MACHINES

*Concrete Surfacing Machy. Corp., Cin-
cinnati, O.
*W. H. Keller, Inc., Grand Haven, Mich.

CONCRETE TOOLS

*The Dallett Co., Philadelphia.

CONDENSERS

*Ingersoll-Rand Co., N. Y.
*Allis-Chalmers Mfg. Co., Milwaukee
*Dean Bros. Co., Indianapolis, Ind.
*Westinghouse Elec. & Mfg. Co., E.
Pittsburgh, Pa.
*Wheeler Cond. & Eng. Co., Carteret, N. J.
*Worthington Pump & Machy Corp., N. Y.

CONDUIT RODS

*F. Bissell Co., Toledo, O.
*Turbine Sewer Mch. Co., Milwaukee.
*Waldo Bros. & Bond Co., Boston.

CONDUITS, UNDERGROUND

*Amer. Vittr. Products Co., Akron, O.
*Johns-Manville Inc., N. Y.
*National Fireproofing Co., N. Y.
*Rie-wil Co., Cleveland.

CONTRACTORS' EQUIPMENT DEAL.

ERS (See pages 150 to 175)

CONVEYORS, BELT

*Austin-Western Rd. Mch. Co., Chicago
*Barber-Greene Co., Aurora, Ill.
*Chicago Automatic Conv. Co., Chicago
*Gallon Ir. Wks. & Mfg. Co., Gallon, O.
*Good Eds. Mch. Co., Kennett Sq., Pa.
*Geo. Hals Mfg. Co., N. Y.
*Jas. B. Seaverns Co., Chicago
*Russell Grader Mfg. Co., Minneapolis
*Brown Hoisting Machy. Co., Cleveland
*Chain Belt Co., Milwaukee
*Gifford Wood Co., Hudson, N. Y.
*Jeffrey Mfg. Co., Columbus, O.
*Link-Belt Co., Chicago
*Samuel Olson & Co., Chicago
*Portable Machy Co., Passaic, N. J.
*Robins Conv. Belt Co., N. Y.
*Standard Conv. Co., No. St. Paul, Minn.
*Webster Mfg. Co., Chicago
*Weller Mfg. Co., Chicago

CONVEYORS, BUCKET

*Atlas Eng. Co., Milwaukee
*Chicago Automatic Conv. Co., Chicago
*Good Eds. Machy. Co., Kennett Sq., Pa.
*Geo. Hals Mfg. Co., N. Y.
*Mead-Morrison Mfg. Co., E. Boston, Mass.
*Russell Grader Mfg. Co., Minneapolis
*Jas. B. Seaverns Co., Chicago
*C. O. Bartlett & Snow Co., Cleveland, O.
*Brown Hoisting Machy. Co., Cleveland, O.
*H. W. Caldwell & Son, Chicago
*Chain Belt Co., Milwaukee
*Fairfield Eng. Co., Marion, O.
*Gifford Wood Co., Hudson, N. Y.
*Godfrey Conv. Co., Elkhart, Ind.
*Guarantee Constn. Co., N. Y.
*Jeffrey Mfg. Co., Columbus, O.
*Link-Belt Co., Chicago
*Samuel Olson & Co., Chicago
*Republic Rubber Co., Youngstown, O.
*Robins Conv. Belt Co., N. Y.
*Stephens Adamson Mfg. Co., Aurora, Ill.
*Webster Mfg. Co., Chicago
*Weller Mfg. Co., Chicago

CONVEYORS, GRAVITY

*Lamson Co., Syracuse, N. Y.
*Logan Co., Louisville, Ky.
*Mathews Gravity Carrier Co., Elwood
City, Pa.
*Standard Conv. Co., No. St. Paul, Minn.

COUPLINGS, HOSE

*Ingersoll-Rand Co., N. Y.
*Cleveland Pneum. Tool Co., Cleveland, O.
*Gliman Mfg. Co., East Boston, Mass.
*W. H. Keller, Inc., Grand Haven, Mich.

CRANES, LOCOMOTIVE

*Bay City Dredge Wks., Bay City, Mich.
*Byers Machine Co., Ravenna, O.
*Erie Steam Shovel Co., Erie, Pa.
*Harnischfeger Corp., Milwaukee
*Kochring Co., Milwaukee
*Orton Crane & Shovel Co., Chicago
*Jas. B. Seaverns Co., Chicago
*Amer. Hst. & Derrick Co., St. Paul, Minn.
*Brown Hoisting Machy Co., Cleveland
*Browning Crane Co., Cleveland, O.
*Bucyrus Co., So. Milwaukee, Wis.
*Davenport Loc. Wks., Davenport, Ia.
*Hanna Eng. Works, Chicago
*Industrial Wks., Bay City, Mich.
*Link-Belt Co., Chicago
*Loc. Crane Co. of Amer., Champaign, Ill.
*Marion Steam Shovel Co., Marion, O.
*McMyler Interstate Co., Cleveland, O.
*Northwest Eng. Works, Chicago

Ohio Loc. Crane Co., Bucyrus, O.
*Thew Shovel Co., Lorain, O.
*U. S. Crane Co., Chicago.

CRANES, OVERHEAD TRAVELING

*Curtis Pneum. Mach. Co., St. Louis
*Harnischfeger Corp., Milwaukee
*Alliance Mach. Co., Alliance, O.
*Chesapeake Iron Wks., Baltimore, Md.
*Chisholm-Moore Mfg. Co., Cleveland, O.
*Milwaukee Elec. Crane Co., Milwaukee
*Morgan Eng. Co., Alliance, O.
*Northern Eng. Wks., Detroit, Mich.
*Shaw Crane Wks., Muskegon, Mich.
*Shepard Elec. Cr. & Hst. Co., Montour
Falls, N. Y.
*Toledo Crane Co., Bucyrus, O.
*Whiting Fdry. & Equip. Co., Harvey, Ill.

CRANES, TRUCK

*Byers Machine Co., Ravenna, O.
*Harnischfeger Corp., Milwaukee
*Orton Crane & Shovel Co., Chicago
*Bay City Fdry. & Mach. Co., Bay City,
Mich.
*Universal Crane Co., Cleveland.

CRANES, WRECKING

*Bucyrus Co., So. Milwaukee, Wis.
*Industrial Wks., Bay City, Mich.

CRAWLER ATTACHMENTS

*Geo. Hals Mfg. Co., New York

CRESOTED BLOCKS, TIMBER, ETC.

*Amer. Cresos. Co., Inc., Louisville, Ky.
*Amer. Cresos. Wks., Inc., N. Orleans, La.
*Carter Bloxensend Flooring Co., K. City,
Mo.
*Colonial Cre. Co., Inc., Louisville, Ky.
*Compressed Wood Preserving Co., Cin-
cinnati, O.

*Cresos. Materials Co., N. Orleans, La.

*Georgia Cresos. Co., Louisville, Ky.

*Jennison-Wright Co., Toledo, O.

*Midland Cresos. Co., Granite City, Ill.

*Pensacola Cresosoting Co., Pensacola, Fla.

*Republic Cresos. Co., Indianapolis, Ind.

*Southern Wood Pres. Co., Atlanta, Ga.

*Wyckoff Pipe & Cresos. Co., N. Y.

CRESOTING AND CRESOTING OILS

*Barrett Co., N. Y.
*Amer. Cresos. Wks., Inc., N. Orleans, La.
*Amer. Tar Prod. Co., Pittsburgh, Pa.
*Jennison-Wright Co., Toledo, O.
*Southern Cresos. Co., Ltd., Slidell, La.
*Southern Pavg. Const. Co., Chattanooga,
Ga.
*Wyckoff Pipe & Cresos. Co., N. Y.

CRUSHERS, HEAVY DUTY

*Allis-Chalmers Mfg. Co., Milwaukee
*O. G. Buchanan Co., N. Y.
*Traylor Eng. & Mfg. Co., Allentown, Pa.

CRUSHERS, ROCK

*Acme Rd. Machy. Co., Frankfort, N. Y.
*Austin-Western Rd. Mach. Co., Chicago
*Gallon Iron Wks. & Mfg. Co., Gallon, O.
*Good Eds. Machy. Co., Kennett Sq., Pa.
*Russell Grader Mfg. Co., Minneapolis
*Smith Eng. Wks., Milwaukee
*Universal Rd. Machy Co., Kingston, N. Y.
*Morgan Eng. Co., Alliance, O.
*New Holland Mach. Co., New Holland, Pa.
*Sturtevant Mill Co., Boston
*Universal Crusher Co., Cedar Rapids, Ia.

CULVERTS, CAST IRON

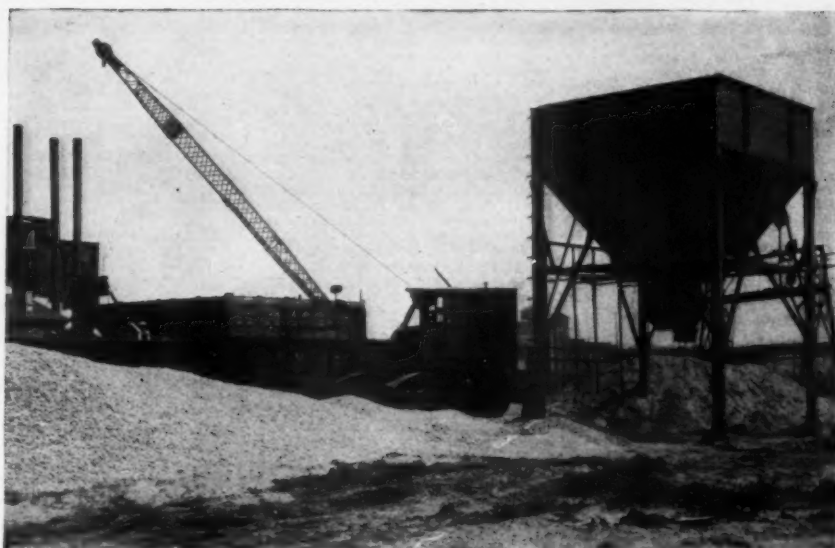
*Gallon Ir. Wks. & Mfg. Co., Gallon, O.
*U. S. C. I. Pipe & Fdry. Co., Burling-
ton, N. J.

*Amer. C. I. Pipe Co., Birmingham, Ala.
*Gilbert Mfg. Co., Aberdeen, S. D.
*R. D. Wood & Co., Philadelphia

CULVERTS, CORRUGATED METAL

*Austin-Western Rd. Mach. Co., Chicago
*Gallon Iron Wks. & Mfg. Co., Gallon, O.
*Good Eds. Mach. Co., Kennett Sq., Pa.
*Newport Culvert Co., Newport, Ky.
*Bark River Bridge & Culv. Co., Bark
River, Mich.
*Boardman Co., Okla. City, Okla.
*Burnham Mfg. Co., Woods Cross, Utah
*Calif. Corr. Culv. Co., W. Berkeley, Cal.

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*



the car...the bin...the crane

Manufacturers of Gasoline, Steam and Electric Locomotive Cranes, Flexible Tread Cranes, Road Wheel Cranes, Gantry Cranes and Power Shovels.

Gasoline and Electric Truck Cranes, Rubber Tired Wheel Cranes, Clamshell Buckets, Orange Peel Buckets $\frac{1}{2}$ to 5 cubic yards capacity. Coal Crushers.

The car must be unloaded; the bin is empty; the trucks are idling and the mixer is waiting for a batch. Who says that the crane is not the most important factor in contracting equipment?

Every experienced road building contractor knows that when the crane is laid up for repairs the whole job is slowed down and sometimes it is impossible to proceed until the crane is in working condition.

Successful contractors guard against this by using the ORTON. They take no chances with "make-shift outfits" or "experiments" which are put on the market only to sell and not to give conscientious service. ORTONS have been working for contractors for nearly twenty years.

The ORTON Model "T" Gasoline Crane with its 35 to 40 ft. boom and $\frac{3}{4}$ yard clamshell is used universally by the largest road builders. It loads bins or hoppers up to a height of 30 ft.; shipped anywhere without dismantling a single part.

The Model "T" and its "side-kick" the Model "E" 1 yard crane are completely described and illustrated in our new bulletin No. 41 . . . send for your copy.

ORTON CRANE & SHOVEL CO., 608 S. Dearborn St., CHICAGO, ILLINOIS

Formerly ORTON & STEINBRENNER CO.

ORTON
CRANE & SHOVEL CO.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

- Canada Ingot Ir. Co., Ltd., Guelph, Ont.
Canton Culv. & Silo Co., Canton, O.
Coast Culv. & Flume Co., Portland, Ore.
Corr. Culv. Co., Moberly, Mo.
Dixie Culv. & Metal Co., Atlanta, Ga.
Dixie Culv. Mfg. Co., Little Rock, Ark.
Fla. Metal Prod. Co., Jacksonville, Fla.
Gilbert Mfg. Co., Aberdeen, S. D.
R. Hardesty Mfg. Co., Denver, Colo.
Highway Prod. & Mfg. Co., Elmira, N.Y.
Ind. Corr. Culv. Co., Mason City, Ia.
Iowa Pure Ir. Co., Des Moines, Ia.
Klauser Mfg. Co., Dubuque, Ia.
Lyle Culv. & Rd. Equip. Co., Minneapolis, Minn.
Md. Culv. & Metal Co., Baltimore.
N. E. Metal Culv. Co., Palmer, Mass.
Nebraska Culv. & Mfg. Co., Wahoo, Neb.
North East Metal Culv. Co., Naasua, N.H.
Northfield Ir. Co., Northfield, Minn.
Northw't'n Sheet & Ir. Wks., Wahpeton, N. D.
Ohio Corr. Culv. Co., Middletown, O.
W. Q. O'Neill Co., Crawfordsville, Ind.
Road Supply & Metal Co., Topeka, Kan.
Sioux Falls Metal Culv. Co., Sioux Falls, S. D.
So. Metal Culv. Co., Salisbury, N. C.
Spokane Culv. & Tank Co., Spokane.
Tenn. Metal Culv. Co., Nashville.
U. S. Br. & Culv. Co., Bay City, Mich.
Va. Metal Mfg. Co., Roanoke, Va.
Western Metal Mfg. Co., Houston, Tex.
Wheeling Corr. Co., Wheeling, W. Va.
Wyatt Metal & Blr. Wks., Dallas, Tex.
- CULVERT FORMS**
Concrete Form Co., Inc., Syracuse, N.Y.
Northfield Iron Co., Northfield, Minn.
- CURE BOXES**
Casey Hedges Co., Chattanooga, Tenn.
H. W. Clark Co., Mattson, Ill.
J. B. Clow & Sons, Chicago.
Madison Fdry. Co., Cleveland, O.
Mueller Co., Decatur, Ill.
- CURE, GUTTER AND BASE FORMS**
(See "Forms, Concrete")
- CURE GUARDS, STEEL**
*W. S. Godwin Co., Baltimore.
- CURE, STEEL PROTECTED**
*Trusco Steel Co., Youngstown, O.
Concrete Steel Co., N. Y.
- CURING OF CONCRETE**
*Dow Chemical Co., Midland, Mich.
*Solvay Process Co., N. Y.
- CUTTERS, PIPE, HAND**
Armstrong Mfg. Co., Bridgeport, Ct.
Barnes Tool Co., New Haven, Ct.
Erie Tool Works, Erie, Pa.
Greenfield Tap & Die Corp., Greenfield, Mass.
Oswego Tool Co., Oswego, N. Y.
Reed Mfg. Co., Erie, Pa.
Walworth Mfg. Co., Boston.
- CUTTERS, ROD AND WIRE**
*Koehring Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Carolus Mfg. Co., Sterling, Ill.
C. D. Edwards Mfg. Co., Albert Lea, Minn.
Helwig Mfg. Co., St. Paul, Minn.
Worthington Pump & Mch. Corp., N.Y.
- CUTTING EDGES**
*Russell Grader Mfg. Co., Minneapolis
J. D. Adams & Co., Indianapolis, Ind.
Shank Mfg. Co., Bucyrus, O.
- CUTTING AND WELDING APPARATUS**
*Alex. Milburn Co., Baltimore.
MacLeod Co., Cincinnati, O.
- DERRICKS, GUY AND STIFF-LEG**
*Clyde Ir. Wks. Sales Co., Duluth, Minn.
*Dobbie Fdry. & Mach. Co., Niagara Falls, N. Y.
*S. Flory Mfg. Co., Bangor, Pa.
*Insley Mfg. Co., Indianapolis, Ind.
*Sagun Derrick Co., Chicago.
- *Street Bros. Mach. Wks., Chattanooga
*Universal Htg. Machy Corp., Buffalo.
Amer. Hat. & Derrick Co., St. Paul, Minn.
Federal Br. & Strua Co., Waukegan, Wis.
John T. Horton Co., N. Y.
Lakeside Bridge & Steel Co., N. Milwaukee, Wis.
Lidgerwood Mfg. Co., N. Y.
National Htg. Eng. Co., Harrison, N.J.
Superior Iron Wks., Superior, Wis.
- DERRICKS, PIPE LAYING**
*Dobbie Fdry. & Mach. Co., Niagara Falls
*Street Bros. Mach. Wks., Chattanooga
Lidgerwood Mfg. Co., N. Y.
Mueller Co., Decatur, Ill.
Squier-Rix Co., Milwaukee.
- DERRICKS, REVOLVING**
*Clyde Iron Wks. Sales Co., Duluth, Minn.
*Dobbie Fdry. & Mach. Co., Niagara Falls
*Street Bros. Mach. Wks., Chattanooga
Lidgerwood Mfg. Co., N. Y.
- DERRICKS, STEEL**
*Clyde Ir. Wks. Sales Co., Duluth, Minn.
*Dobbie Fdry. & Mach. Co., Niagara Falls
*Insley Mfg. Co., Indianapolis, Ind.
*Street Bros. Mach. Wks., Chattanooga
Amer. Hat. & Derrick Co., St. Paul
Hayward Co., N. Y.
Lidgerwood Mfg. Co., N. Y.
Taylor Port. St. Derrick Co., Chicago.
- DERRICKS, STEEL PORTABLE**
*Clyde Ir. Wks. Sales Co., Duluth, Minn.
*Dobbie Fdry. & Mach. Co., Niagara Falls
*Street Bros. Mach. Wks., Chattanooga
Amer. Hoist & Derrick Co., St. Paul
Lidgerwood Mfg. Co., N. Y.
- DERRICKS, TRAVELING**
*Bay City Dredge Wks., Bay City, Mich.
*Clyde Ir. Wks. Sales Co., Duluth, Minn.
*Dobbie Fdry. & Mach. Co., Niagara Falls
*Orton Crane & Shovel Co., Chicago
*Street Bros. Mach. Wks., Chattanooga
Amer. Hoist & Derrick Co., St. Paul
Austin Machy Corp., Muskegon, Mich.
Hayward Co., N. Y.
Nat'l Htg. Eng. Co., Harrison, N. J.
- DERRICK FITTINGS**
*S. Flory Mfg. Co., Bangor, Pa.
*Street Bros. Mach. Wks., Chattanooga
Lidgerwood Mfg. Co., N. Y.
- DIESEL ENGINES** (See Engines, Oil)
- DISTRIBUTORS, TAR AND ASPHALT**
Kinney Mfg. Co., Boston
- DISTRIBUTING PLANTS, CONCRETE**
*Lakewood Eng. Co., Cleveland.
*Insley Mfg. Co., Indianapolis, Ind.
*Ransome Conc. Mch. Co., Dunellen, N.J.
Archer Iron Works, Chicago.
- DITCHING MACHINES** (See Excavators)
- DIVIDING PLATES (ROAD)**
*W. S. Godwin Co., Baltimore
- DOORS AND SHUTTERS, STEEL ROLLING**
Cornell Iron Wks., B'klyn, N. Y.
Kinneard Mfg. Co., Columbus, O.
Variety Fire Door Co., Chicago.
J. G. Wilson Corp., N. Y.
- DRAFTING MACHINES**
Univ. Drafting Mach. Co., Cleveland, O.
- DREDGES**
*Bay City Dredge Wks., Bay City, Mich.
*Erie Steam Shovel Co., Erie, Pa.
*Orton Crane & Shovel Co., Chicago
*Street Bros. Mach. Wks., Chattanooga
Amer. Steel Dredge Co., Ft. Wayne, Ind.
Bucyrus Co., So. Milwaukee, Wis.
Ellicott Machy Corp., Baltimore.
Hayward Co., N. Y.
Lidgerwood Mfg. Co., N. Y.
Marion Steam Shovel Co., Marion, O.
Osgood Co., Marion, O.
Stockton Iron Wks., Stockton, Cal.
- Superior Iron Wks., Superior, Wis.
- DREDGES, DIPPER**
*Bay City Dredge Wks., Bay City, Mich.
Amer. Steel Dredge Co., Ft. Wayne, Ind.
Austin Machy Corp., Muskegon, Mich.
Bucyrus Co., So. Milwaukee, Wis.
Marion Steam Shovel Co., Marion, O.
Osgood Co., Marion, O.
- DREDGES, HYDRAULIC**
Bucyrus Co., South Milwaukee, Wis.
Ellicott Mach. Corp., Baltimore.
Marion Steam Shovel Co., Marion, O.
Morris Mach. Wks., Baldwinville, N.Y.
- DREDGING MACHINERY**
*S. Flory Mfg. Co., Bangor, Pa.
*Street Bros. Mach. Wks., Chattanooga
Lidgerwood Mfg. Co., N. Y.
- DREDGING PUMPS AND ACCESSORIES**
*Ingersoll-Rand Co., New York
Erie Pump & Engine Wks., Medina, N.Y.
- DRILLS, CORE**
*Ingersoll-Rand Co., N. Y.
*McKiernan-Terry Drill Co., N. Y.
*Sullivan Machy Co., Chicago.
Dobbins Core Drill Co., Inc., N. Y.
Standard Diamond Drill Co., Chicago.
- DRILLS, ROCK**
*Dallett Co., Philadelphia.
*Denver Rock Drill Mfg. Co., Denver.
*Hardsoc Wonder Drill Co., Ottumwa, Ia.
*Ingersoll-Rand Co., N. Y.
*McKiernan-Terry Drill Co., N. Y.
*Sullivan Machy Co., Chicago.
Chicago Pneum. Tool Co., N. Y.
Cleveland Pneum. Tool Co., Cleveland, O.
Cleveland Rock Drill Co., Cleveland, O.
Gilman Mfg. Co., E. Boston.
Helwig Mfg. Co., St. Paul, Minn.
Independent Pneum. Tool Co., Chicago.
W. H. Keller, Inc., Grand Haven, Mich.
Wood Drill Wks., Paterson, N. J.
- DRILLS FOR WELLS AND BLAST HOLES** (See Well Drilling Machy)
- DRUMS, HOLDING**
*Blaw-Knox Co., Pittsburgh, Pa.
*Clyde Ir. Wks. Sales Co., Duluth, Minn.
*Dobbie Fdry. & Mch. Co., Niagara Falls.
*Street Bros. Mach. Wks., Chattanooga
Hayward Co., N. Y.
Monaghan Machine Co., Chicago.
- DYERS, ASPHALT AND CEMENT**
Allis-Chalmers Mfg. Co., Milwaukee.
Amer. Blower Co., Detroit, Mich.
Amer. Process Co., N. Y.
Atlas Dryer Co., Cleveland, O.
C. O. Bartlett & Snow Co., Cleveland, O.
F. D. Cummer & Son Co., Cleveland, O.
Moshier Mfg. Co., Chicago
Ruggles-Cole Eng. Co., N. Y.
- DYERS, SAND AND GRAVEL**
*Acroil Turner Co., Union Hill, N. J.
*Chausse Oil Burner Co., Elkhart, Ind.
*Littleford Bros., Cincinnati, O.
*Alex. Milburn Co., Baltimore, Md.
C. O. Bartlett & Snow Co., Cleveland, O.
Chase & Lyman, Boston.
Moshier Mfg. Co., Chicago
- DUMP BODIES FOR CONCRETE**
*Easton Car & Const'n Co., Easton, Pa.
Lee Trailer & Body Co., Chicago
- DUMP BODIES FOR MOTOR TRUCKS**
*Anthony Co., Streator, Ill.
*Easton Car & Const'n Co., Easton, Pa.
*Hell Co., Milwaukee.
*Highway Trailer Co., Edgerton, Wis.
*Insley Mfg. Co., Indianapolis, Ind.
*Littleford Bros., Cincinnati, O.
*Mack Trucks, Inc., N. Y.
*Marion Steel Body Co., Marion, O.
*N. Y. Central Ir. Wks., Hagerstown, Md.
*Stewart Iron Wks. Co., Cincinnati.
*Wood Hydr. Hoist & Body Co., Detroit
Am. Truck & Body Co., Martinsville, Va.
Archer Iron Wks., Chicago.
Columbia Body Corp., Columbia, Pa.

If you find any errors or omissions in this Where to Purchase list, please send corrections to
CONTRACTORS' & ENGINEERS' MONTHLY



*How do your
batches turn out~?*

If you are using "THE STANDARD" Mixer you are always assured of thorough, quick mixing.

"THE STANDARD" skip has an unusually wide mouth—takes its load easily—is quickly raised and empties cleanly at one shot—no fussing or tugging. The material is mixed in a narrow drum and is whirled, sifted and turned by the revolving blades quickly and thoroughly and is discharged through a large 16½-in. opening that permits the batch to be emptied quickly.

If you are interested in speeding up your mixes, and increasing your daily yardage—investigate "THE STANDARD"—it's the only 100 per cent Mixer on the market.

May we send you "THE STANDARD" Mixer Booklet?

"THE STANDARD" Concrete Mixers for LONG LIFE—DEPENDABLE SERVICE—EASY MOBILITY—QUICK LOADING—EASY DISCHARGE

THE STANDARD SCALE & SUPPLY CORPORATION

Pittsburgh

New York
145 Chambers Street

Sales Offices.

Philadelphia
523 Arch Street

Cleveland
721 St. Clair Ave. N. E.

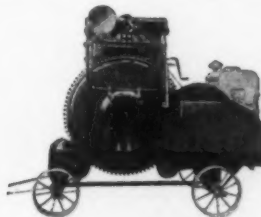
Penna.

Chicago
1420 Michigan Blvd.



"The Standard" 5-S Power Loader Mixer

Made in both Power Loader or Low Charger types. Used on short sidewalks and other similar operations where large volume is not a factor.



Two views of "The Standard" 7-S Power Loader

Note unusually large discharge opening and non-obstructing charging skip.



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

- Columbian St. Tank Co., Kansas City, Pa.
Detroit Trailer & Mach. Co., Detroit.
Ditwiler Mfg. Co., Gallion, O.
Gallon All Steel Body Co., Gallion, O.
Griscorn-Russell Co., N. Y.
Herr Dump Car Mfg. Co., Coatesville, Pa.
Hughes-Keenan Co., Mansfield, O.
The Hug Co., Highland, Ill.
Jennings Aut. Dump Body, Roanoke, Va.
Lee Trailer & Body Co., Chicago.
Mandit Body Co., Keokuk, Ia.
Pechstein Iron Wks., Keokuk, Ia.
Superior Body Corp'n, Marion, Ind.
Van Dorn Iron Wks., Cleveland.
- DUMP CARTS AND WAGONS, HORSE**
*Acme Rd. Machy. Co., Frankfort, N. Y.
*Austin-Western Rd. Machy. Co., Chicago.
*Eagle Wagon Wks., Auburn, N. Y.
*La Plant-Cheate Mfg. Co., Cedar Rapids, Ia.
- *Bax-Watson Corp., Canastota, N. Y.
*Russell Grader Mfg. Co., Minneapolis.
Acme Wagon Co., Emigsville, Pa.
Austin Mfg. Co., Chicago.
Bain Wagon Co., Kenosha, Wis.
Columbia Body Corp., Columbia, Pa.
Gilbert Mfg. Co., Aberdeen, S. D.
Hagy Wagon Co., Abingdon, Va.
G. H. Halchuk & Bro., Jeffersonville, Ind.
Little Red Wagon Co., Omaha, Neb.
Stockland Rd. Machy. Co., Minneapolis.
Streich Bros., Oshkosh, Wis.
Thornhill Wagon Co., Lynchburg, Va.
Western Wheeled Scraper Co., Aurora, Ill.
- DUST LAYING (CALCIUM CHLORIDE)**
*Dew Chemical Co., Midland, Mich.
*Selvay Process Co., N. Y.
Carbondale Calcium Co., Carbondale, Pa.
- DYNAMITE (See Explosives)**
- EJECTORS, SEWAGE (See Sewage Ejectors)**
- ELECTRIC GENERATORS AND MOTORS**
Louis Allis Co., Milwaukee.
Allis-Chalmers Mfg. Co., Milwaukee.
Crocker-Wheeler Co., Ampers, N. J.
Fairbanks, Morse & Co., Chicago.
General Elec. Co., Schenectady, N. Y.
Graybar Electric Co., New York.
Ideal Elec. & Mfg. Co., Mansfield, O.
Lincoln Elec. Co., Cleveland, O.
Robbins & Myers Co., Springfield, O.
Triumph Elec. Co., Cincinnati, O.
Wagner Elec. Mfg. Co., St. Louis.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
- ELECTRIC LAMPS**
General Elec. Co., Schenectady, N. Y.
Westinghouse Lamp Co., N. Y.
- ELECTRIC LIGHTING PLANTS**
*Climax Eng. Co., Clinton, Ia.
Allis-Chalmers Mfg. Co., Milwaukee.
Cushman Motor Wks., Lincoln, Neb.
Fairbanks, Morse & Co., Chicago.
General Elec. Co., Schenectady, N. Y.
Graybar Electric Co., New York.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
- ELECTRIC TRANSFORMERS**
Allis-Chalmers Mfg. Co., Milwaukee.
General Elec. Co., Schenectady, N. Y.
Kuhlman Elec. Co., Bay City, Mich.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
- ELECTRIC WIRES (See Wire)**
- ELEVATORS, BUCKET**
*Atlas Eng. Co., Milwaukee.
*Austin-Western Rd. Machy. Co., Chicago.
*Good Rd. Machy. Co., Kennett Sq., Pa.
*See Hais Mfg. Co., N. Y.
*Lathford Bros., Cincinnati.
*Russell Grader Mfg. Co., Minneapolis.
*Spears-Wells Machy. Co., Oakland, Cal.
- *Univ. Rd. Machy. Co., Kingston, N. Y.
Austin Mfg. Co., Chicago.
C. O. Bartlett & Snow Co., Cleveland, O.
Brown Hstg. Machy. Co., Cleveland, O.
Chain Belt Co., Milwaukee, Wis.
Fairfield Eng. Co., Marion, Ohio.
Gifford-Wood Co., Hudson, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Co., Chicago.
Samuel Olson & Co., Chicago.
Robins Conv. Belt Co., N. Y.
Webster Mfg. Co., Chicago.
Weller Mfg. Co., Chicago.
Worthington Pump & Mch. Corp., N.Y.
- ELEVATORS, PASSENGER, FREIGHT, ETC.**
Am. Elev. & Mach. Co., Louisville, Ky.
Atlantic Elev. Co., Inc., Philadelphia.
Bay State Elev. Co., Springfield, Mass.
Haughton Elev. & Mach. Co., Toledo, O.
Kaestner & Hecht Co., Chicago.
Lewellyn Jr. Wks., Los Angeles, Cal.
Montgomery Elev. Co., Moline, Ill.
Otis Elevator Co., N. Y.
O. Ridgway & Son Co., Coatesville, Pa.
A. B. Sea Elec. Elev. Co., N. Y.
Speidel Elev. Corp., Reading, Pa.
Warner Elev. Mfg. Co., Cincinnati.
Warsaw Elev. Co., Warsaw, N. Y.
- ENGINES, GAS AND GASOLINE**
*Alamo Eng. Co., Hillsdale, Mich.
*Beaver Mfg. Co., Milwaukee, Wis.
*C. H. & E. Mfg. Co., Milwaukee.
*Caterpillar Tractor Co., San Leandro, Cal.
*Climax Eng. Co., Clinton, Ia.
*Continental Motors Corp., Detroit.
*Domestic Eng. & Pump Co., Shippensburg, Pa.
*Hercules Corp'n., Evansville, Ind.
*Hercules Motors Corp., Canton, O.
*Ingersoll-Rand Co., New York.
*John Lauson Mfg. Co., New Holstein, Wis.
*Le Roi Co., Milwaukee.
*New Engine Co., Lansing, Mich.
*Stover Mfg. & Eng. Co., Freeport, Ill.
*Waukesha Motor Co., Waukesha, Wis.
*Allis-Chalmers Mfg. Co., Milwaukee.
Buda Co., Harvey, Ill.
Charter Gas Eng. Co., Sterling, Ill.
Chicago Pneum. Tool Co., N. Y.
Cook Motor Co., Delaware, O.
Cushman Motor Wks., Lincoln, Neb.
Evinrude Motor Co., Milwaukee.
Fairbanks, Morse & Co., Chicago.
Foss Gas Eng. Co., Springfield, O.
Fuller & Johnson Mfg. Co., Madison, Wis.
Gade Bros. Mfg. Co., Iowa Falls, Ia.
Hinkley Motors, Inc., Detroit.
Minneapolis Steel & Machy. Co., Minneapolis, Minn.
Sanderson-Cyclone Drill Co., Orrville, O.
Sterling Eng. Co., Buffalo, N. Y.
Universal Motor Co., Oshkosh, Wis.
Weber Engine Co., Kansas City, Mo.
Wisconsin Motor Mfg. Co., Milwaukee.
Worthington Pump & Mch. Corp., N.Y.
- ENGINES, HOISTING (See Hoists)**
- ENGINES, KEROSENE**
*Alamo Eng. Co., Hillsdale, Mich.
*Climax Eng. Co., Clinton, Ia.
*Stover Mfg. & Eng. Co., Freeport, Ill.
*Waukesha Motor Co., Waukesha, Wis.
- ENGINES, OIL DIESEL**
*Haddfield-Pendfield Steel Co., Bucyrus, O.
Allis-Chalmers Mfg. Co., Milwaukee.
Busch-Sulzer Bros.-Diesel Eng. Co., St. Louis.
Pulton Iron Wks. Co., St. Louis.
McIntosh & Seymour Corp., Auburn, N.Y.
Nordberg Mfg. Co., Milwaukee.
St. Mary's Oil Eng. Co., St. Charles, Mo.
Western Machy. Co., Los Angeles, Cal.
- SEMI-DIESEL**
*Ingersoll-Rand Co., N. Y.
*Stover Mfg. & Eng. Co., Freeport, Ill.
Anderson Fdry. & Mach. Co., Anderson, Ind.
- Bessemer Gas Eng. Co., Grove City, Pa.
Buckeye Machinery Co., Lima, O.
Charter Gas Eng. Co., Sterling, Ill.
Chicago Pneum. Tool Co., N. Y.
De La Vergne Mach. Co., N. Y.
Fairbanks, Morse & Co., Chicago.
Foss Gas Eng. Co., Springfield, O.
Lombard Gov. Co., Ashland, Mass.
Muncie Oil Eng. Co., Muncie, Ind.
New London Ship & Eng. Co., Groton, Ct.
Nordberg Mfg. Co., Milwaukee.
Taylor Mach. Co., Cleveland, O.
Weber Eng. Co., Kansas City, Mo.
Worthington Pump & Mch. Corp., N.Y.
- ENGINES, PUMPING**
*Climax Eng. Co., Clinton, Ia.
*Stover Mfg. & Eng. Co., Freeport, Ill.
*Waukesha Motor Co., Waukesha, Wis.
Allis-Chalmers Mfg. Co., Milwaukee.
Hooven, Owens, Rentschler Co., Hamilton, O.
Murray Iron Wks., Burlington, Ia.
Nordberg Mfg. Co., Milwaukee.
Worthington Pump & Mch. Corp., N.Y.
- ENGINES, STEAM**
*Ingersoll-Rand Co., New York.
Allis-Chalmers Mfg. Co., Milwaukee.
Dake Eng. Co., Grand Haven, Mich.
Erie-Ball Eng. Co., Pittsburgh, Pa.
Filer-Stowell Co., Milwaukee.
Hardie-Tynes Mfg. Co., Birmingham, Ala.
J. Lefel Co., Springfield, O.
Morris Mach. Wks., Baldwinville, N. Y.
Murray Iron Works Co., Burlington, Ia.
Nagle Eng. & Bldg. Wks., Erie, Pa.
Nordberg Mfg. Co., Milwaukee.
R. F. Starvant Co., Hyde Park, Boston.
Vilter Mfg. Co., Milwaukee.
- ENGINES, SWINGING**
*Dake Eng. Co., Grand Haven, Mich.
Lidgerwood Mfg. Co., N. Y.
- EXCAVATING MACHINERY (See Names Under Excavators, Also Steam Shovels)**
- EXCAVATORS, CABLEWAY**
*Street Bros. Mach. Co., Chattanooga, Amer. Mfg. & Eng. Co., Kalamazoo, Mich.
Bucyrus Co., So. Milwaukee, Wis.
Ersted Machy. Mfg. Co., Portland, Ore.
Lidgerwood Mfg. Co., N. Y.
- EXCAVATORS, DITCH AND TRENCH**
*Barber-Greene Co., Aurora, Ill.
*Bay City Dredge Wks., Bay City, Mich.
*Buckeye Trac. Ditcher Co., Findlay, O.
*Byers Mach. Co., Ravenna, O.
*Clyde Jr. Wks. Sales Co., Duluth, Minn.
*Erie Steam Shovel Co., Erie, Pa.
*Harnischfeger Corp., Milwaukee.
*Insley Mfg. Co., Indianapolis, Ind.
*Keystone Driller Co., Beaver Falls, Pa.
*Lidgerwood Mfg. Co., N. Y.
*Orton Crane & Shovel Co., Chicago.
*Russell Grader Mfg. Co., Minneapolis.
*Speeder Machy. Corp., Fairfield, Ia.
*Street Bros. Mach. Co., Chattanooga, Amer. Hst. & Derrick Co., St. Paul.
Austin Mach. Corp'n., Muskegon, Mich.
Brown Hstg. Machy. Co., Cleveland.
Bucyrus Co., So. Milwaukee, Wis.
Cleveland Trencher Co., Euclid, O.
Economy Exc. Co., Iowa Falls, Ia.
Ersted Machy. Mfg. Co., Portland, Ore.
Hayward Co., N. Y.
Marion Steam Shovel Co., Marion, O.
Monaghan Mach. Co., Chicago.
Osgood Co., Marion, O.
Owensboro Ditcher & Grader Co., Owensboro, Ky.
Parsons Co., Newton, Ia.
Thew Shovel Co., Lorain, O.
O. T. Topping Machy. Co., Dayton, O.
- EXCAVATORS, DRAG-LINE**
*Bay City Dredge Wks., Bay City, Mich.
*Byers Mach. Co., Ravenna, O.
*Clyde Jr. Wks. Sales Co., Duluth, Minn.
*Erie Steam Shovel Co., Erie, Pa.
*Gallon Jr. Wks. & Mfg. Co., Gallion, O.
*Harnischfeger Corp., Milwaukee, Wis.

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*

Kefauver
&
Allen

McLean
Contracting
Co.

The
Arundel
Corporation

M.A.
Long
& Co.

American Paving
& Construction
Co.

They all used STEEL FORMS on the Washington, D.C., Aqueduct

Because

- 1.—Each contract was thoroughly analyzed by the Contractors and Blaw-Knox Engineers, enabling a definite daily schedule to be worked out and adhered to.
- 2.—Both inside and outside forms were designed to be handled mechanically.
- 3.—The forms were shipped ready for immediate use.
- 4.—No repairs or maintenance were required.

- 5.—An absolutely smooth finish was obtained with STEEL FORMS.
- 6.—The forms could be heated, thereby aiding winter concreting.
- 7.—The work was speeded up.
- 8.—They were very much cheaper than wood forms.
- 9.—They were easily and economically handled.

Any large or small concreting job can be placed on a basis such as this. Consult with Blaw-Knox before you start any concreting work—before you send in your bid.

BLAW-KNOX COMPANY

667 FARMER'S BANK BLDG., PITTSBURGH, PA.

New York

Baltimore

Birmingham

Chicago

Detroit

Cleveland

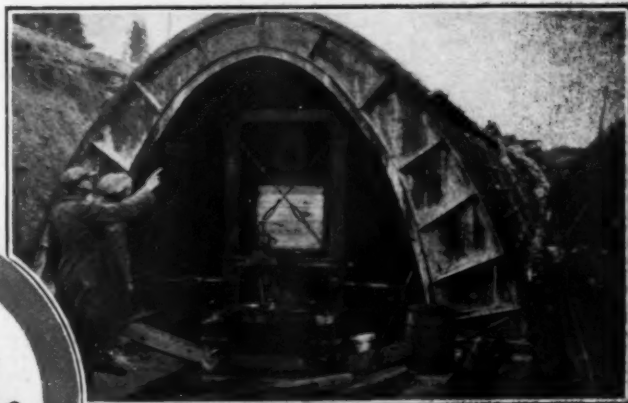
Buffalo

Philadelphia

Ask about
Blaw-Knox
Steel Forms
for:

Bridges
Buildings
Columns
Dams
Floors
Foundations
Locks
Piers
Reservoirs
Roads
Sewage Disposal Plants
Sewers
Sidewalks
Streets
Subways
Tunnels
Walls
or for every conceivable type of concrete construction.
The Blaw-Knox Catalog will be sent upon request.

Visit the
ROAD SHOW
CHICAGO—1937
January 10-14



Blaw-Knox Traveling Collapsible STEEL FORMS were used in building this 10 ft. x 10 ft. 6 in. horseshoe concrete conduit—extending over a stretch of 9½ miles from the Great Falls of the Potomac to Washington.

for
**STEEL
FORMS**

just ask Blaw-Knox

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

*Orten Crane & Shovel Co., Chicago
 *Russell Grader Mfg. Co., Minneapolis.
 *Sauerman Bros., Chicago.
 *T. L. Smith Co., Milwaukee, Wis.
 *Speeder Machy. Corp., Fairfield, Ia.
 *Street Bros. Mach. Co., Chattanooga
 Austin Machy. Corp., Muskegon, Mich.
 Brown Hatg. Machy. Co., Cleveland, O.
 Browning Crane Co., Cleveland, O.
 Bucyrus Co., So. Milwaukee, Wis.
 Economy Exc. Co., Iowa Falls, Ia.
 Ersted Machy. Mfg. Co., Portland, Ore.
 C. L. Gade Exc. Wks., Iowa Falls, Ia.
 Hayward Co., N. Y.
 Industrial Wks., Bay City, Mich.
 Lidgerwood Mfg. Co., N. Y.
 Link-Belt Co., Chicago.
 Marion Steam Shovel Co., Marion, O.
 Monaghan Mach. Co., Chicago.
 Osgood Co., Marion, O.
 Schofield-Burkett Const'n Co., Macon, Ga.
 Thew Shovel Co., Lorain, O.

EXPANDED METAL

*Truscon Steel Co., Youngstown, O.
 Berger Mfg. Co., Canton, O.
 Consolidated Exp. Metal Co., Braddock, Pa.
 Kalman Steel Co., Chicago.
 Northwestern Exp. Metal Co., Chicago.
 Youngstown Pressed St. Co., Warren, O.

EXPANSION JOINT MATERIAL

*Barber Asphalt Co., Philadelphia.
 *Barrett Co., N. Y.
 *Phillip Carey Co., Cincinnati, O.
 *W. H. Meadows, Inc., Elgin, Ill.
 *Texas Co., N. Y.
 *Truscon Steel Co., Youngstown, O.
 Hoosier Asph. Co., Alexandria, Ind.
 Pioneer Asph. Co., Lawrenceville, Ill.
 Serviced Products Corp., Chicago
 Waring-Underwood Co., Philadelphia.

EXPLOSIVES

*Hercules Powder Co., Wilmington, Del.
 Atlas Powder Co., Wilmington, Del.
 E. I. Du Pont de Nemours & Co., Wilmington, Del.
 Giant Powder Co., S. Francisco, Cal.
 Grasselli Powder Co., Cleveland, O.

FENCING

*Stewart Ir. Wks. Co., Cincinnati, O.
 Adrian Wire Fence Co., Adrian, Mich.
 Amer. Fence & Const. Co., New York
 American Steel & Wire Co., Chicago.
 Anchor Post Iron Works, N. Y.
 Cyclone Fence Co., Waukegan, Ill.
 Dwiggin Wire Fence Co., Anderson, Ind.
 Frost-Superior Fence Co., Warren, O.
 Ind. Steel & Wire Co., Muncie, Ind.
 Interlocking Fence Co., Morton, Ill.
 Keystone Stl. & Wire Co., Peoria, Ill.
 Kokomo Stl. & Wire Co., Kokomo, Ind.
 Nitselman Bros., Muncie, Ind.
 Mich. Wire Fence Co., Adrian, Mich.
 Page Stl. & Wire Prod. Corp., Bridgeport, Conn.
 Pittsburgh Steel Co., Pittsburgh, Pa.
 Tex. Cyclone Fence Co., Ft. Worth, Tex.
 Wickwire-Spencer Steel Co., N. Y.
 Youngstown Sheet & Tube Co., Youngstown, O.

FILING EQUIPMENT STEEL

Art Metal Constr. Co., Jamestown, N. Y.
 Berger Mfg. Co., Canton, O.
 Gen. Fireproofing Co., Youngstown, O.
 Van Dorn Iron Wks., Cleveland, O.

FILTERS, OIL

S. F. Bower & Co., Inc., Ft. Wayne, Ind.
 Wayne Tank & Pump Co., Ft. Wayne, Ind.

FILTERS, WATER

Amer. Water Softener Co., Phila., Pa.
 Graver Corporation, E. Chicago, Ind.
 International Filter Co., Chicago.
 Norwood Eng. Co., Florence, Mass.
 Roberts Filter Co., Darby, Pa.
 W. B. Seale & Sons, Pittsburgh, Pa.

FINISHING MACHINES, CONCRETE ROAD (See Concrete Road Finishers)

FIRE ALARM SYSTEMS

Gamewell Co., Newton Upper Falls, Mass.

FIRE ALARM SIRENS

*Union Water Meter Co., Worcester, Mass.
 Erick Elec. Siren Co., St. Paul, Minn.
 Federal Sign System, Chicago.
 Hendrie & Bolthoff Mfg. & Sup. Co., Denver, Colo.
 Sterling Siren Fire Alarm Co., Rochester, N. Y.

FIRE APPARATUS, MOTOR

*Mack Trucks, Inc., N. Y.
 Ahrens-Fox Fire Eng. Co., Cincinnati, O.
 American-La France Fire Eng. Co., Elmira, N. Y.
 Boyer Fire App. Co., Logansport, Ind.
 Brockway Motor Fire App. Co., Cortlandt, N. Y.
 Foamite-Childs Corp., Utica, N. Y.
 Hale Fire Pump Co., Conshohocken, Pa.
 Northern Fire Apparatus Co., Minneapolis, Minn.
 Peter Pirach & Sons Co., Kenosha, Wis.
 Prospect Fire Engine Co., Prospect, O.
 Seagrave Co., Columbus, O.
 Stuts Fire Eng. Co., Indianapolis, Ind.
 Waterous Fire Eng. Wks., St. Paul, Minn.
 White Co., Cleveland

FIRE EXTINGUISHERS, CHEMICAL

American-La France Fire Eng. Co., Elmira, N. Y.
 Buffalo Fire App. Corp., Buffalo, N. Y.
 C. J. Cross Mfg. Co., Inc., N. Y.
 Foamite-Childs Co., Utica, N. Y.
 Pyrene Mfg. Co., Newark, N. J.

FIRE HOSE (See Hose, Fire)

FIREPROOF BUILDING MATERIAL

*Truscon Steel Co., Youngstown, O.
 Berger Mfg. Co., Canton, O.
 Detroit Stl. Prod. Co., Detroit, Mich.
 Gen. Fireproofing Co., Youngstown, O.
 Kalman Steel Co., Chicago.
 Keasbey & Mattison Co., Ambler, Pa.
 Kinnear Mfg. Co., Columbus, O.
 National Fireproofing Co., Pittsburgh.
 U. S. Gypsum Co., Chicago.
 Youngstown Pressed Steel Co., Warren, O.

FIRST AID EQUIPMENT

American-La France Fire Engine Co., Elmira, N. Y.

FITTINGS, ACID RESISTING

*Barber Asphalt Co., Philadelphia

FLEXIBLE JOINTS

*U. S. C. I. Pipe & Fdry Co., Burlington, N. J.
 Central Foundry Co., N. Y.
 Coldwell-Wilcox Co., Newburgh, N. Y.
 Crane Co., Chicago.
 United Lead Company, N. Y.

FLOOR PLATES

Amer. Pressed Steel Co., Phila.
 Central Ir. & Stl. Co., Harrisburg, Pa.
 Allan Wood, Iron & Steel Co., Phila.

FLOORING, COMPOSITION

*Barrett Co., N. Y.
 Am. Mason Safety Tr. Co., Lowell, Mass.
 Johns-Manville, Inc., N. Y.
 Marine Decking & Sup. Co., Phila., Pa.
 Franklin R. Muller & Co., Waukegan, Ill.

FLOORS, WOOD BLOCK

*Barrett Co., N. Y.
 Carter Bloxonend Flooring Co., Kansas City, Mo.
 Jennison-Wright Co., Toledo, O.
 Midland Cress. Co., Toledo, O.
 Republic Cress. Co., Indianapolis, Ind.
 Son. Wood Preserving Co., Atlanta, Ga.
 Wyckoff Pipe & Cress. Co., N. Y.

FLUSH TANKS

*Pacific Flush Tank Co., Chicago & N.Y.

FLUSHERS, STREET (See Street Flushers and Sprinklers)

FORD AND FORDSON EQUIPMENT

AIR COMPRESSORS FOR FORDSONS

*Curtis Pneum. Mach. Co., St. Louis.
 *Ingersoll-Rand Co., New York
 *Schramm, Inc., West Chester, Pa.

AIR COMPRESSORS FOR FORD TRUCKS

*Buhl Co., Chicago.
 *Domestic Eng. & Pump Co., Shippensburg, Pa.
 *Ingersoll-Rand Co., New York
 *Schramm, Inc., West Chester, Pa.

BACKFILLERS

Waterman Corp., Detroit

CONCRETE MIXERS ON FORD TRUCKS

*Amer. Cem. Mach. Co., Keokuk, Ia.
 Archer Iron Wks., Chicago
 Milwaukee Conc. Mixer Co., Milwaukee.

DUMP BODIES FOR FORD TRUCKS

*Anthony Co., Streator, Ill.
 *Eagle Wagon Wks., Auburn, N. Y.
 *Easton Car & Const'n Co., Easton, Pa.
 *Heil Co., Milwaukee, Wis.
 *Highway Trailer Co., Edgerton, Wis.
 *Marion Steel Body Co., Marion, O.
 *N. Y. Cent. Iron Wks. Co., Inc., Hagerstown, Md.

*Stewart Iron Wks. Co., Cincinnati, O.

*Superior Body Corp., Marion, Ind.

*Wood Hyer, Hoist & Body Co., Detroit.

American Prod. & Trd. Co., Chicago.

Archer Iron Works, Chicago.

Columbian Stl. Tank Co., K. City, Mo.

Ditwiler Mfg. Co., Gallon, O.

Gallon All Steel Body Co., Gallon, O.

Griscam-Russell, N. Y.

Herr Dump Body Mfg. Co., Coatesville, Pa.

Hughes-Keenan Co., Mansfield, O.

Jennings Auto. Dump Body Co., Roanoke, Va.

Lee Trailer & Body Co., Chicago.

Mandt Co., Keokuk, Ia.

Martin-Parry Corp., York, Pa.

Pechstein Iron Works, Keokuk, Ia.

Thompson Mfg. Co., Williston, S. C.

Van Dorn Iron Wks., Cleveland, O.

FORD MOTOR PUMPER

*American Steam Pump Co., Battle Creek, Mich.

FORD PLOWS

*Roderick Lean Mfg. Co., Mansfield, O.

FORD REPLACEMENT UNITS (AXLES AND TRANSMISSIONS)

*Fuller & Sons Mfg. Co., Kalamazoo.
 *Waukegan Motor Co., Waukegan, Wis.
 *Warford Corp., N. Y.
 Hinkley Motors, Inc., Detroit
 Ruckstell Sales & Mfg. Co., N. Y.

FORD SPECIAL BODIES

Standard Comm. Body Corp., B'klyn.

FORD TRUCK EXTENSION FRAMES

Swedish Crucible Steel Co., Detroit.

FORDSON DITCHING MACHINE

Chas. T. Topping, Dayton, O.

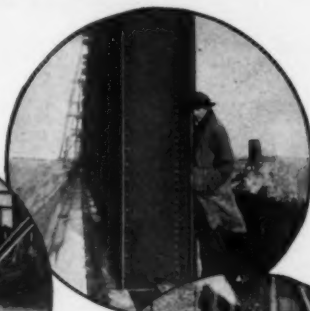
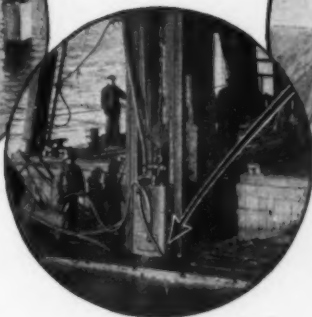
FORDSON HOISTS

*Glyde Ir. Wks. Sales Co., Duluth, Minn.
 Ersted Mach. Mfg. Co., Portland, Ore.
 Oila Eng. & Fdry. Co., Muskogee, Okla.
 Otis Eng. Corp., N. Y.
 Sheffield Tool & Sup. Co., Sheffield, Pa.
 Squier-Rix Co., Milwaukee.

FORDSON LOCOMOTIVES

Adamson Motor Co., Birmingham, Ala.
 Brookville Truck & Tractor Co., Brookville, Pa.

If you find any errors or omissions in this Where to Purchase list, please send corrections to
 CONTRACTORS' & ENGINEERS' MONTHLY



"The Quick-acting Hammer Gives Us Better Penetration"

The Chief Engineer of a large Western Railroad writes as follows:

"I am anxious to specify McKiernan-Terry 9-B-2 in driving piling ahead of track, to avoid splitting. The old-style drop hammer with pile rings will not give us sufficient penetration. It also shatters the heads of the piles badly, and in time decay occurs in the cracks where the pile has split. With the anvil block used in the McKiernan-Terry Hammer, this splitting can be largely avoided, and the quick-acting hammer gives us better penetration."

McKiernan-Terry Pile Hammers are all rapid drivers because they are all double-acting. The steam (or compressed air)

not only lifts the driving ram but also *forces it downward* with tremendous driving power. Furthermore, the rapid blows (140 per minute with the 9-B-2) tend to keep the piles in constant motion, reduces skin friction, and lessen the strain on the tops of the piles.

Even more important, from the financial standpoint, is the labor saving, and the fact that rapid pile driving speeds up the job as a whole.

Our Bulletin 35 covers the whole range of pile hammer work, from the heaviest concrete monoliths to the lightest wood and steel sheeting. It contains sixty interesting job pictures. In sending for it, please state whether you wish to see our local sales representative.

McKiernan-Terry Drill Company

19 Park Row, New York



McKiernan-Terry

DOUBLE-ACTING RAPID-DRIVING
PILE HAMMERS

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

FORDSON POWER SHOVELS

*Anthony Co., Stretser, Ill.
 *Insley Mfg. Co., Indianapolis, Ind.
 Glasgow Eng. Co., St. Louis, Mo.
 Mandt Company, Keokuk, Ia.
 Milwaukee Elec. Crane & Mfg. Co., Milwaukee.
 Squier-Rix Co., Milwaukee.

FORDSON ROAD GRADERS

*Gallon Jr. Wks. & Mfg. Co., Gallien, O.
 *Good Rds. Mach. Co., Kennett Sq., Pa.
 *Hedfield-Penfield Stl. Co., Bucyrus, O.
 *Russell Grader Mfg. Co., Minneapolis
 J. D. Adams & Co., Indianapolis, Ind.
 C. D. Edwards Mfg. Co., Albert Lea, Minn.
 Gilbert Mfg. Co., Aberdeen, S. D.
 Shaw-Enoch Tractor Co., Minneapolis
 Wehr Co., Milwaukee, Wis.

FORDSON ROAD ROLLERS

*Acme Road Mch. Co., Frankfort, N. Y.
 *Austin-Western Rd. Mach. Co., Chicago.
 *Gallon Jr. Wks. & Mfg. Co., Gallien, O.
 *Good Rds. Mch. Co., Kennett Sq., Pa.
 Horn & Strietor Co., Davenport, Ia.

FORDSON SAW EGGS

*Amer. Saw Mill Mch. Co., Hacketts-town, N. J.
 *Miami Trailer-Scraper Co., Troy, O.

FORDSON SCRAPER OUTFITS

*Miami Trailer-Scraper Co., Troy, O.
 *Gustav Schaefer Wagon Co., Cleveland, O.
 Killefer Mfg. Co., Los Angeles, Calif.
 Miskin Scraper Wks., Ucon, Idaho.

FORDSON TRACTION TRHEADS

*Belle City Mfg. Co., Racine, Wis.
 *Full-Crawler Co., Milwaukee, Wis.
 *Tractor Grip Wheel Co., Toledo, O.

FORDSON TRACTOR TRUCKS

Toppins Trac. Truck Co., Appleton, Wis.

FORDSON TRAILER EQUIPMENT

*Easton Car & Const'n Co., Easton, Pa.
 *Miami Trailer-Scraper Co., Troy, O.
 Trail-Ford Corp., Ann Arbor, Mich.
 Trailmobile Co., Cincinnati, O.
 Troy Trailer & Wagon Co., Troy, O.
 Whitehead & Kales Co., Detroit.

FORDSON TRUCK LOADERS

*Gallon Jr. Wks. & Mfg. Co., Gallien, O.
 *George Haise Mfg. Co., N. Y.
 *Spears-Wellis Mch. Co., Oakland, Cal.
 Leeman Loader Mfg. Co., Des Moines, Ia.
 *Nelson Iron Wks., Passaic, N. J.
 Specialty Eng. Co., Philadelphia, Pa.

FORGES

*Hauck Mfg. Co., B'lyn, N. Y.
 Buffalo Forge Co., Buffalo, N. Y.
 Champion Blower & Forge Co., Lancaster, Pa.

FORGES, OIL (Rivet Heating)

*Hauck Mfg. Co., B'lyn, N. Y.
 *Mead-Morrison Mfg. Co., E. Boston.

FORM CLAMPS

*Insley Mfg. Co., Indianapolis, Ind.
 M. & M. Wire Clamp Co., Minneapolis
 Marion Mail Iron Wks., Marion, Ind.
 Universal Form Clamp Co., Chicago.

FORMS, CONCRETE

*Blaw-Knox Co., Pittsburgh, Pa.
 *Conery & Co., Phila., Pa.
 *Holtzel Stl. Form & Ir. Co., Warren, O.
 *Hotchkiss Stl. Products Co., Binghamton, N. Y.
 *Lakewood Eng. Co., Cleveland, O.
 *Truscon Steel Co., Youngstown, O.
 Concrete Form Co., Inc., Syracuse, N.Y.

Metal Forms Corp., Milwaukee.
 Raber & Lang Mfg. Co., Kendallville, Ind.

FORMGRADERS

Edward G. Carr, Chicago.

FORMS, MANHOLE PIPE, SEWER, ETC.

*Holtzel Stl. Form & Ir. Co., Warren, O.

FOUNTAINS, DRINKING

Casey-Hedges Co., Chattanooga, Tenn.
 Jas. B. Clow & Sons, Chicago.
 Crane Co., Chicago.
 Murdock Mfg. & Sup. Co., Cincinnati.
 Pure San. Dr. Ftn. Co., Haydenville, Mass.
 Rundle-Spence Mfg. Co., Milwaukee.
 Stewart Iron Wks. Co., Cincinnati, O.
 Halsey W. Taylor Co., Warren, O.
 Century Brass Wks., Belleville, Ill.

FURNITURE AND FILES, STEEL

Art Metal Const. Co., Jamestown, N.Y.
 Gen. Fireproofing Co., Youngstown, O.
 Van Dorn Jr. Wks. Co., Cleveland, O.

FURRING AND SLEEPER ANCHORS

Dayton Sure Grip & Shore Co., Dayton, O.

GABAGE CANS (See Cans)

GABAGE DISPOSAL

American Becari Corp., N. Y.
 C. O. Bartlett & Snow Co., Cleveland, O.
 Decarie Incinerator Co., L. I. Co., N. Y.
 Goder Incinerator Corp., Chicago.
 Hiller Eng. & Const. Co., B'klyn, N. Y.
 Morse-Boulger Destructor Co., N. Y.
 Nye Odorless Crematory Co., Macon, Ga.

GABAGE TRAILERS AND BODIES

*Highway Trailer Co., Edgerton, Wis.
 Lee Trailer & Body Co., Chicago

GABAGE TRUCKS

*Holl Co., Milwaukee, Wis.
 *Rex-Watson Corp., Canastota, N. Y.
 Geo. H. Holzbog & Bro., Jeffersonville, Ind.
 Lee Trailer & Body Co., Chicago.
 Timm Wagon Co., Timm, O.

GAS METERS (See Meters, Gas)

GAS PRODUCERS

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
 R. D. Wood & Co., Phila., Pa.

GASOLINE STORAGE TANKS

*Holl Co., Milwaukee, Wis.
 *Littleford Bros., Cincinnati, O.
 Biggs Boiler Works, Akron, O.
 Birmingham Tank Co., B'mingham, Ala.
 S. F. Bowser & Co., Inc., Ft. Wayne, Ind.
 Chicago Bridge & Iron Wks., Chicago.
 Graver Corp., E. Chicago, Ind.
 Wm. B. Scaife & Sons, Pittsburgh, Pa.
 Tokheim Oil Tank & Pump Co., Ft. Wayne, Ind.
 United Iron Wks., Inc., K. City, Mo.
 Wayne Tank & Pump Co., Ft. Wayne, Ind.

GATES, SLUICE

Chapman Valve Mfg. Co., Indian Orchard, Mass.
 Coffin Valve Co., Boston, Mass.
 Coldwell-Wilcox Co., Newburgh, N. Y.
 R. Hardesty Mfg. Co., Denver.
 Ludlow Valve Mfg. Co., Troy, N. Y.

GATES FOR PARKS AND CEMENTERIES

*Stewart Iron Wks. Co., Cincinnati, O.

GAUGES, WATER

Bristol Co., Waterbury, Conn.
 Lunkenheimer Co., Cincinnati, O.
 Walworth Mfg. Co., Boston.

GAUGES, SURFACE, RESERVOIR AND SPECIAL WATERWORKS

Builders Iron Fdry., Providence, R. I.
 Simplex Valve & Meter Co., Phila., Pa.

GLASS, FIREPROOF (See Wire Glass)

GOVERNORS, GASOLINE ENGINE

*Pickering Governor Co., Portland, Ct.

GRADERS, ROAD (See Road Graders)

GRADER BLADES

*Gallon Jr. Wks. & Mfg. Co., Gallien, O.
 *Russell Grader Mfg. Co., Minneapolis
 J. D. Adams & Co., Indianapolis, Ind.
 Shunk Mfg. Co., Bucyrus, O.

GRAND STANDS, PORTABLE

Circle A. Prod. Corp., Newcastle, Ind.
 Leavitt Mfg. Co., Urbana, Ill.
 Wayne Iron Wks., Wayne, Pa.

GRATING, STEEL

*Blaw-Knox Co., Pittsburgh

GRINDERS AND SAND RAMMERS

*Ingersoll-Rand Co., N. Y.
 Chicago Pneum. Tool Co., N. Y.
 Cleveland Pneum. Tool Co., Cleveland, O.
 Wm. H. Keller, Inc., Grand Haven, Mich.

GYPNUM PRODUCTS

U. S. Gypsum Co., Chicago.
 Fenton Mfg. Co., Cleveland, O.

HAMMERS, STEAM, PILE (See Pile Hammers, Steam)

HEAT INSULATING MATERIAL

*Phillip Carey Co., Cincinnati, O.
 Johns-Manville, Inc., N. Y.

HEATING KETTLES (See Kettles)

HITCHES

*Gustav Schaefer Wagon Co., Cleveland, O.
 Fenton Mfg. Co., Cleveland, O.

HOISTS, AUTOMATIC

*Zetterlund Hst. & Mach. Co., Milwaukee

HOISTS, BELT-DRIVEN

*Amer. Saw Mill Mch. Co., Hacketts-town, N. J.
 *Dobbie Fdry. & Mach. Co., Niagara Falls.
 *Harnischfeger Corp., Milwaukee, Wis.
 *Mead-Morrison Mfg. Co., E. Boston, Mass.
 *Mundy Sales Corp., N. Y.
 *Street Bros. Mach. Wks., Chattanooga, Tenn.
 American Hoist & Derrick Co., St. Paul, Minn.
 Lidgerwood Manufacturing Co., N. Y.
 Weller Mfg. Co., Chicago.

HOISTS, CONCRETE, TOWER

*Insley Mfg. Co., Indianapolis, Ind.
 *Lakewood Eng. Co., Cleveland, O.
 *Mead-Morrison Mfg. Co., East Boston
 *Ransome Conc. Mch. Co., Dunnellen, N.J.
 *Street Bros. Mach. Wks., Chattanooga
 Lidgerwood Manufacturing Co., N. Y.

HOISTS, ELECTRIC

*Clyde Iron Wks. Sales Co., Duluth, Minn.
 *Dobbie Fdry. & Mach. Co., Niagara Falls
 *S. Flory Mfg. Co., Bangor, Pa.
 *Harnischfeger Corp., Milwaukee.
 *Mead-Morrison Mfg. Co., E. Boston.
 *Mundy Sales Corp., N. Y.
 *O.K. Clutch & Mach. Co., Columbia, Pa.
 *Street Bros. Mach. Wks., Chattanooga, Tenn.
 *Vulcan Iron Wks., Wilkes-Barre, Pa.
 Am. Hoist & Derrick Co., St. Paul, Minn.
 Chrischold-Moore Mfg. Co., Cleveland, O.
 Ntl. Hoisting Eng. Co., Harrison, N. J.
 Lidgerwood Manufacturing Co., N. Y.
 Thomas Elev. Co., Chicago.
 Treadwell Eng. Co., Easton, Pa.

HOISTS, GASOLINE

*Am. Cem. Mch. Co., Inc., Keokuk, Ia.

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*



For Road Repairing

where a rooting plow has to go clear down and rip up the old hardened surface, a Fordson, equipped with Trackson Full-Crawlers, is the most economical power unit you can use.

The addition of the Trackson Full-Crawler with extra weight, crawler tracks, shorter turning, makes the Fordson a sure-footed, 2-ton crawler tractor with plenty of power for this and other kinds of work demanding sure-footed crawler traction.

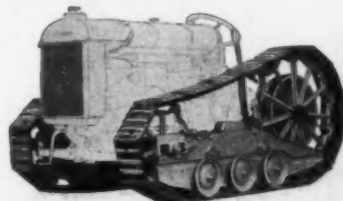
Ring-oiling lubrication, dirt-proof bearings, all-steel construction, and simplicity of design are reasons why Trackson Full-Crawlers are standing up under the abuse of such work.

Low initial cost, easy adjustment, low cost and quick service on repairs, make this equipment easy to get and easy to keep on the job.

The Full-Crawler Co.

Dept. of Geo. H. Smith Steel Casting Co.

519 Clinton St. Milwaukee, Wis.



Trackson

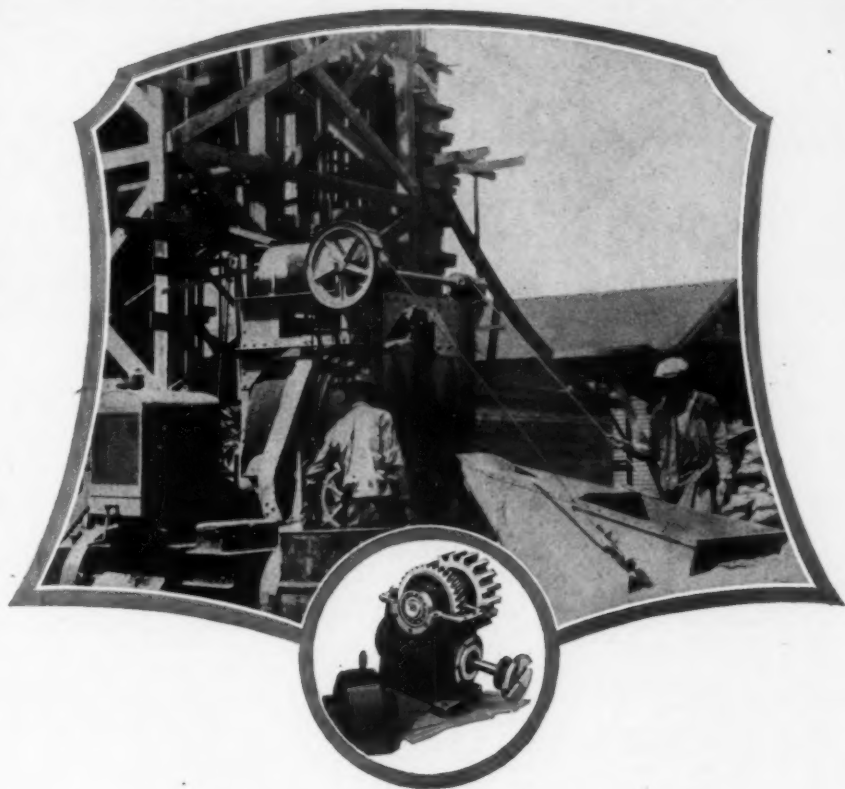
Full-Crawler
for Fordsons

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

- *Amer. Saw Mill Mch. Co., Hackettstown, N. J.
 *C. H. & E. Mfg. Co., Milwaukee
 *Clyde Iron Wks. Sales Co., Duluth, Minn.
 *Domestic Eng. & Pump Co., Shippensburg, Pa.
 *S. Flory Mfg. Co., Bangor, Pa.
 *Harnischfeger Corp., Milwaukee
 *Mead-Morrison Mfg. Co., E. Boston.
 *Mundy Sales Corp., N. Y.
 *Novo Engine Co., Lansing, Mich.
 *O.K. Clutch & Mach. Co., Columbia, Pa.
 *Pioneer Tractors, Inc., Winona, Minn.
 *Schramm, Inc., West Chester, Pa.
 *Street Bros. Mach. Wks., Chatta., Tenn.
 Amer. Hoist & Derrick Co., St. Paul, Minn.
 Amer. Mfg. & Eng. Co., Kalamazoo, Mich.
 Buffalo Hoist & Derrick Co., Buffalo, N. Y.
 Construction Mch. Co., Waterloo, Ia.
 Ersted Mch. Mfg. Co., Portland, Ore.
 Lansing Co., Lansing, Mich.
 Lidgerwood Manufacturing Co., N. Y.
 Ntl. Hoisting Eng. Co., Harrison, N. J.
 Orr & Sembower, Reading, Pa.
 Squier-Rix Co., Milwaukee
 Thomas Elevator Co., Chicago
- HOISTS, PNEUMATIC**
 *Curtis Pneum. Mch. Co., St. Louis
 *Dake Engine Co., Grand Haven, Mich.
 *Denver Rock Drill Mfg. Co., Denver.
 *Ingersoll-Rand Co., N. Y.
 *Mead-Morrison Mfg. Co., E. Boston.
 *Sullivan Mch. Co., Chicago.
 Chicago Pneumatic Tool Co., N. Y.
 Detroit Hoist & Mach. Co., Detroit.
 Gilman Mfg. Co., E. Boston, Mass.
 Hanna Eng. Works, Chicago.
 Independent Pneum. Tool Co., Chicago.
 Northern Eng. Wks., Detroit, Mich.
 Worthington Pump & Mch. Corp., N. Y.
- HOISTS, STEAM**
 *Clyde Iron Wks. Sales Co., Duluth, Minn.
 *Dake Eng. Co., Grand Haven, Mich.
 *Denver Rock Drill Mfg. Co., Denver.
 *S. Flory Mfg. Co., Bangor, Pa.
 *Ingersoll-Rand Co., Indianapolis, Ind.
 *Mead-Morrison Mfg. Co., E. Boston.
 *Mundy Sales Corp., N. Y.
 *Street Bros. Mach. Wks., Chattanooga
 Amer. Hoist & Derrick Co., St. Paul, Minn.
 Hardie-Tynes Mfg. Co., Birmingham, Ala.
 Lidgerwood Manufacturing Co., N. Y.
 Ntl. Hoisting Eng. Co., Harrison, N. J.
 Orr & Sembower, Reading, Pa.
 Thomas Elev. Co., Chicago.
 Treadwell Eng. Co., Easton, Pa.
- HOISTS FOR MOTOR TRUCKS**
 *Heil Co., Milwaukee.
 *Wood Hydr. Hoist & Body Co., Detroit.
 Borg & Beck Co., Chicago
 Detroit Trailer & Mach. Co., Detroit.
 Hydr. Hoist Mfg. Co., St. Paul, Minn.
 Lidgerwood Manufacturing Co., N. Y.
 Rock Mfg. Co., Waterloo, N. Y.
 Superior Body Corp., Marion, Ind.
 Van Dorn Iron Wks., Cleveland, O.
- HOLLOW TILE**
 P. Bannon Pipe Co., Louisville, Ky.
 Wm. E. Dee Co., Chicago.
 W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
 Medal Paving Brick Co., Cleveland, O.
 Metropolitan Pav. Brick Co., Canton, O.
 Ntl. Fireproofing Co., Pittsburgh, Pa.
- HOPPERS, CONCRETE (Aggregate Measuring)**
 *Insley Mfg. Co., Indianapolis, Ind.
 *Lakewood Eng. Co., Cleveland, O.
- *Littleford Bros., Cincinnati, O.
 *Ransome Conc. Mch. Co., Dunellen, N. J.
 *Jas. B. Seaverns Co., Chicago
- HOSE, AIR**
 *The Dallest Co., Phila., Pa.
 *Ingersoll-Rand Co., N. Y.
 Chicago Pneumatic Tool Co., N. Y.
 Cincinnati Rubber Mfg. Co., Cincinnati.
 Cleveland Rock Drill Co., Cleveland, O.
 Gilman Mfg. Co., E. Boston, Mass.
 Goodyear Tire & Rubber Co., Akron, O.
 Mulcahey Co., Inc., Phila., Pa.
 Penna. Flexible Metallic Tubing Co., Phila., Pa.
 Republic Rubber Co., Youngstown, O.
 U. S. Rubber Co., N. Y.
- HOSE, FIRE**
 Bi-Lateral Fire Hose Co., Chicago.
 Eureka Fire Hose Mfg. Co., N. Y.
 Fabric Fire Hose Co., N. Y.
 B. F. Goodrich Rubber Co., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
- HOUSE NUMBERS**
 Hamilton Metal Prod. Co., Hamilton, O.
 Niagara Metal Stamping Corp., Niagara Falls, N. Y.
- HOUSES, PORTABLE (See Buildings, Portable)**
- HYDRANTS, FIRE**
 Chapman Valve Mfg. Co., Indian Orchard, Mass.
 Columbian Ir. Wks., Chatta., Tenn.
 Darling Valve & Mfg. Co., Williamsport, Pa.
 Eddy Valve & Mfg. Co., Waterford, N. Y.
 Iowa Valve Co., Oskaloosa, Ia.
 Kennedy Valve Mfg. Co., Elmira, N. Y.
 Ludlow Valve Mfg. Co., Troy, N. Y.
 Norwood Eng. Co., Florence, Mass.
 Rensselaer Valve Co., Troy, N. Y.
 A. P. Smith Mfg. Co., E. Orange, N. J.
 R. D. Wood & Co., Phila., Pa.
- HYDRAULIC RAMS**
 Deming Co., Salem, O.
 Rife Hydraulic Engine Co., N. Y.
 Rumsey Pump Co., Seneca Falls, N. Y.
 Seattle Mach. Works, Seattle, Wash.
- ICE-MAKING MACHINERY**
 *Ingersoll-Rand Co., New York
 Arctic Ice Mach. Co., Canton, O.
 Baker Ice Mach. Co., Omaha, Neb.
 Brunswick-Kroeschell Co., N. Brunswick, N. J.
 Carbondale Mach. Co., Carbondale, Pa.
 De La Vergne Mach. Co., N. Y.
 Frick Co., Inc., Waynesboro, Pa.
 Triumph Ice Mach. Co., Cincinnati, O.
 United Iron Wks., Inc., K. City, Mo.
 Vilter Mfg. Co., Milwaukee, Wis.
 Henry Vogt Mach. Co., Louisville, Ky.
 York Mfg. Co., York, Pa.
- INCINERATORS, GARBAGE (See Garbage Disposal)**
- INDICATOR POSTS (See Valves)**
- INSPECTING LABORATORIES**
 *Conard & Busby, Burlington, N. J.
 Allentown Testing Lab., Allentown, Pa.
 E. L. Conwell & Co., Phila., Pa.
 Gulick-Henderson Co., N. Y.
 Robert W. Hunt & Co., Chicago.
 N. Y. Testing Lab., N. Y.
 Pittsburgh Testing Lab., Pittsburgh.
 Standard Testing Lab., Inc., N. Y.
- INSTRUMENTS AND SUPPLIES (Surveyors' and Engineers')**
 Wm. Ainsworth & Sons, Denver, Col.
 L. Beckman Co., Toledo, O.
 C. L. Berger & Sons, Boston.
 Brandis & Sons Mfg. Co., B'klyn, N. Y.
 Buff & Buff Mfg. Co., Boston.
 Eugene Dietzgen Co., Chicago.
- W. & L. E. Gurley, Troy, N. Y.
 Keuffel & Esser Co., Hoboken, N. J.
 A. Llets Co., San Francisco.
 Leopold-Volpel & Co., Portland, Ore.
 Warren Knight Co., Phila., Pa.
 F. Weber & Co., Phila., Pa.
 David White Co., Milwaukee, Wis.
- INTEGRAL CURB AND BASE FORMS (See 'Forms, Concrete')**
- IRON WORK, STRUCTURAL AND ORNAMENTAL (See Bridges and Buildings)**
- JACKS, LIFTING**
 *McKiernan-Terry Drill Co., N. Y.
 *Oil Jack Co., N. Y.
 Duff Mfg. Co., Pittsburgh, Pa.
 Joyce-Cridland Co., Dayton, O.
 A. O. Norton, Inc., Boston.
 Rees Mfg. Co., Pittsburgh, Pa.
 Templeton, Kenly & Co., Ltd., Chicago.
 Watson-Stillman Company, N. Y.
- JACKS, PIPE FORCING**
 Duff Mfg. Co., Pittsburgh, Pa.
- JAIL AND PRISON WORK**
 *Stewart Iron Wks. Co., Cincinnati, O.
 E. T. Barnum Iron Wks., Detroit.
 Fries & Son Steel Const. & Eng. Co., Covington, Ky.
 Pauly Jail Bldg. Co., St. Louis, Mo.
 Van Dorn Ir. Wks. Co., Cleveland, O.
- JOINTS, EXPANSION PAVING (See Expansion Joint Material)**
- JOINTS, FLEXIBLE PIPE (See Flexible Joints)**
- JOISTS, STEEL**
 *Truscon Steel Co., Youngstown, O.
 Berger Mfg. Co., Canton, O.
 Gen'l Firepfg. Bldg. Products, Youngstown, O.
- KETTLES, FOR ASPHALT AND TAR**
 *Acme Ed. Mach. Co., Frankfort, N. Y.
 *Aeroli Burner Co., Union Hill, N. J.
 *Barber Asphalt Co., Phila., Pa.
 *Chausse Oil Burner Co., Elkhart, Ind.
 *Connery & Co., Inc., Phila., Pa.
 *Good Rd. Mch. Co., Kennett Sq., Pa.
 *Hauck Mfg. Co., B'klyn, N. Y.
 *Jos. Honhorst Co., Cincinnati, O.
 *Littleford Bros., Cincinnati, O.
 *Spears-Wells Mch. Co., Oakland, Cal.
 *Union Iron Wks., Inc., Hoboken, N. J.
 *Universal Ed. Mach. Co., Kingston, N. Y.
 Birmingham Tank Co., Birmingham, Ala.
 Chase & Lyman, Boston, Mass.
 Kinney Mfg. Co., Boston, Mass.
 Macleod Co., Cincinnati, O.
 G. L. Staebner Ir. Wks., Inc., Long Island City, N. Y.
 Tarrant Mfg. Co., Saratoga Spgs., N. Y.
- LANTERNS, CONTRACTORS'**
 *Alex. Milburn Co., Baltimore, Md.
 Adams & Westlake Co., Chicago.
 Deffance Lantern & Stamping Co., Rochester, N. Y.
 R. E. Dietz Co., N. Y.
 Handian, Buck Mfg. Co., St. Louis.
 Star Headlight & Lantern Co., Rochester, N. Y.
- LATH, METAL**
 *Truscon Steel Co., Youngstown, O.
 Berger Mfg. Co., Canton, O.
 Bostwick Steel Lath Co., Niles, O.
 Gen. Fireproofing Co., Youngstown, O.
 Milwaukee Corr. Co., Milwaukee, Wis.
 Northwestern Exp. Metal Co., Chicago.
 Penn. Metal Co., Boston, Mass.
 Sykes Metal Lath & Roofing Co., Niles, O.
 Youngstown Pressed Steel Co., Warren, O.
- LAWN MOWERS**
 Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.

If you find any errors or omissions in this Where to Purchase list, please send corrections to
 CONTRACTORS' & ENGINEERS' MONTHLY



“Try to Feed it”—

that's the best description we've received yet of the speed of the new Lakewood Mixers—try feeding it—you'll agree they're fast.

—And coupled with that speed there are advantages that come only with the Lakewood Worm Speed Reduction.

Write for a copy of Bulletin 20-M

Export Office
30 Church St.
New York City

The Lakewood Engineering Company
CLEVELAND, OHIO

Cable
Address
“Brosites”

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

Coldwell Lawn Mower Co., Newburgh, N.Y.
 Gilson Mfg. Co., Fort Washington, Wis.
 Ideal Power Lawn Mower Co., Lansing, Mich.
 Jacobsen Mfg. Co., Racine, Wis.
 Penna. Lawn Mower Wks., Phila., Pa.
 Phila. Lawn Mower Co., Phila., Pa.
 S. P. Townsend Co., Bloomfield, N. J.
 Western Implement Co., Porth Washington, Wis.
 Worthington Mower Co., Stroudsburg, Pa.

LEADITE

The Leadite Co., Phila., Pa.

LEAD-MELTING FURNACES

*Aerall Burner Co., Union Hill, N. J.
 *Hauk Mfg. Co., B'klyn, N. Y.
 *Littleford Bros., Cincinnati, O.
 Canton Fdry. & Mch. Co., Canton, O.
 Chicago Flexible Shaft Co., Chicago.
 Geo. Focht's Sons, Hoboken, N. J.
 A. P. Smith Mfg. Co., E. Orange, N. J.

LETTERING GUIDES

Wood-Regan Instrument Co., N. Y.

LETTERS AND FIGURES, METAL

Niagara Metal Stamp Corp., Niagara Falls, N. Y.

LIGHTS, CONTRACTORS'

*Carbic Mfg. Co., Duluth, Minn.
 *Hauk Mfg. Co., B'klyn, N. Y.
 *Alex. Milburn Co., Baltimore, Md.
 General Elec. Co., Schenectady, N. Y.
 Macleod Co., Cincinnati, O.
 Frost-O-Lite Co., Inc., N. Y.

LIGHTING STANDARDS (See Street Lamp Posts)

LIQUID CHLORINE

Arnold, Hoffman & Co., Inc., N. Y.
 Electro Bleaching Gas Co., N. Y.
 Hooker Electrochemical Co., N. Y.
 Mathieson Alkali Works, Inc., N. Y.
 Penna. Salt Mfg. Co., Phila., Pa.

LOADERS, GRAVEL, WAGON, CAR, ETC.

*Atlas Eng. Co., Milwaukee, Wis.
 *Barber-Greene Co., Aurora, Ill.
 *Bay City Dredge Wks., Bay City, Mich.
 *Chicago Automatic Conv. Co., Chicago
 *Gallen Ir. Wks. & Mfg. Co., Gallen, O.
 *Geo. Hales Mfg. Co., N. Y.
 *Halsel St. Form & Ir. Co., Warren, O.
 *Helson Iron Wks., Passaic, N. J.
 *Russell Grader Mfg. Co., Minneapolis.
 *Saurman Bros., Chicago.
 *T. L. Smith Co., Milwaukee, Wis.
 *Spears-Wells Mch. Co., Oakland, Cal.
 *Universal Rd. Mach. Co., Kingston, N.Y.
 Austin Mach. Corp., Muskegon, Mich.
 Bonney Supply Co., Inc., Rochester, N.Y.
 Brown Hoisting Mch. Co., Cleveland.
 Chain Belt Co., Milwaukee, Wis.
 Conant Mach. Co., Concord Junction, Mass.
 Fairfield Eng. Co., Marion, O.
 Gifford-Wood Co., Hudson, N. Y.
 Jeffrey Mfg. Co., Columbus, O.
 Lee Trailer & Body Co., Chicago.
 Link-Belt Co., Chicago.
 Portable Mch. Co., Passaic, N. J.
 H. B. Sackett Screen & Chute Co., Chicago.
 Schofield-Burkett Const'n Co., Macon, Ga.
 Specialty Eng. Co., Phila., Pa.
 Squier-Rix Co., Milwaukee.
 Weller Mfg. Co., Chicago.

LOCKERS, STEEL

Durand Steel Locker Co., Chicago.
 Hart & Hutchinson Co., N. Britain, Ct.
 Lyon Metallie Mfg. Co., Aurora, Ill.
 Fred. Medart Mfg. Co., St. Louis, Mo.

LOCOMOTIVES, FOR CONTRACTORS, ETC.

*Valcan Iron Wks., Wilkes-Barre, Pa.

*Geo. D. Whitcomb Co., Rochelle, Ill.
 Adamson Motor Co., Birmingham, Ala.
 Baldwin Loc. Wks., Phila., Pa.
 Brookville Tract & Tractor Co., Brookville, Pa.
 Davenport Loc. Wks., Davenport, Ia.
 Fate-Roth-Heath Co., Plymouth, O.
 Industrial Equip. Co., Minster, O.
 Mid-West Locomotive Wks., Cincinnati.
 Lima Loc. Wks., Lima, O.
 Milwaukee Loc. Mfg. Co., Milwaukee.
 Plymouth Loc. Wks., Plymouth, O.
 H. K. Porter Co., Pittsburgh, Pa.
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

LUBRICANTS

*D-A Lubricant Co., Ind'p'l's, Ind.

MANHOLE COVERS (See Castings)

METAL LATH (See "Lath")

METAL ROOFING (See "Roofing")

METER BOXES

H. W. Clark Co., Mattoon, Ill.
 Clarkville Fdry. & Mach. Wks., Clarksville, Tenn.
 J. B. Clow & Sons, Chicago.
 Columbian Ir. Wks., Chattanooga, Tenn.
 Ford Meter Box Co., Wabash, Ind.
 Mueller Co., Decatur, Ill.
 J. S. Schofield's Sons Co., Macon, Ga.

METER COUPLINGS

*Neptune Meter Co., N. Y.
 *Pittsburgh Meter Co., Pittsburgh, Pa.
 *Union Water Meter Co., Worcester, Mass.
 H. W. Clark Co., Mattoon, Ill.
 Ford Meter Box Co., Wabash, Ind.
 Mueller Co., Decatur, Ill.

METER TESTERS

*Neptune Meter Co., N. Y.
 *Pittsburgh Meter Co., Pittsburgh, Pa.
 H. W. Clark Co., Mattoon, Ill.
 Ford Meter Box Co., Wabash, Ind.
 Mueller Co., Decatur, Ill.
 National Meter Co., N. Y.

METERS, ELECTRIC (WATTHOUR)

Duncan Elec. Mfg. Co., LaFayette, Ind.
 General Elec. Co., Schenectady, N. Y.
 Sangamo Elec. Co., Springfield, Ill.
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

METERS, Gas

*Pittsburgh Meter Co., Pittsburgh, Pa.
 American Meter Co., N. Y.
 Bailey Meter Co., Cleveland, O.
 Builders Iron Fdry., Providence, R. I.
 Cleveland Gas Meter Co., Cleveland, O.

METERS, WATER, OIL & GASOLINE

*Neptune Meter Co., N. Y.
 *Pittsburgh Meter Co., Pittsburgh, Pa.
 *Union Water Meter Co., Worcester, Mass.
 Badger Meter Mfg. Co., Milwaukee.
 Buffalo Meter Co., Buffalo, N. Y.
 Federal Motor Corp'n, E. Orange, N. J.
 Gamon Meter Co., Newark, N. J.
 Hersey Mfg. Co., Boston, Mass.
 National Meter Co., N. Y.
 Thomson Meter Co., B'klyn, N. Y.
 Worthington Pump & Mch. Corp., N.Y.

METERS, WATER (VENTURI TYPE)

Builders Iron Fdry., Providence, R. I.
 Simplex Valve & Meter Co., Phila., Pa.

MIXERS, CONCRETE (See Concrete Mixers)

MIXERS, GROUT

*Am. Cem. Mch. Co., Inc., Keokuk, Ia.
 *Lakewood Eng. Co., Cleveland, O.
 *T. L. Smith Co., Milwaukee, Wis.
 *Union Iron Wks., Inc., Hoboken, N. J.
 Kent Mach. Co., Kent, O.

MIXERS, HOT

*Barber Asphalt Co., Phila., Pa.
 *Koshring Co., Milwaukee, Wis.

MIXERS, MORTAR

*Am. Cem. Mch. Co., Inc., Keokuk, Ia.
 *Blaw-Knox Co., Pittsburgh, Pa.
 *Blystone Mfg. Co., Cambridge Spgs., Pa.
 *C. H. & E. Mfg. Co., Milwaukee, Wis.
 *Kiel Mach. Co., Kiel, Wis.
 *Lakewood Eng. Co., Cleveland, O.
 *Lakewood Eng. Co., Cleveland, O.
 *Ransome Cenc. Mch. Co., Dunellen, N.J.
 *T. L. Smith Co., Milwaukee, Wis.
 Anchor Mfg. Co., Chicago.
 Austin Mach. Corp., Muskegon, Mich.
 Construction Mach. Co., Waterloo, Ia.
 Kent Mach. Co., Kent, O.
 Knickerbocker Co., Jackson, Mich.
 Lansing Co., Lansing, Mich.
 Marsh-Capron Co., Chicago.
 Talbot-Flood Mfg. Co., Kansas City, Mo.

MIXERS, PLASTER

*Blystone Mfg. Co., Cambridge Spgs., Pa.
 Esick & Co., Los Angeles, Cal.
 Talbot-Flood Mfg. Co., Kansas City, Mo.

MOTORCYCLES

Cleveland Motorcycle Co., Cleveland, O.
 Excelsior Motor Mfg. & Supply Co., Chicago.
 Harley-Davidson Motor Co., Milwaukee.
 Indian Motorcycle Co., Springfield, Mass.

MOTORS, ELECTRIC (See Electric Generators and Motors)

MOTORS, GASOLINE (See Engines, Gas and Gasoline)

MOTOR TRUCKS

*Ford Motor Co., Detroit.
 *General Motors Trk. Co., Detroit, Mich.
 *Graham Bros., Detroit.
 *Mack Trucks, Inc., New York
 *Buggies Motor Truck Co., Saginaw, Mich.
 Acme Motor Truck Co., Cadillac, Mich.
 Atterbury Motor Car Co., Buffalo, N.Y.
 Autocar Co., Ardmore, Pa.
 Bessemer Motor Truck Co., Grove City, Pa.
 Brockway Motor Truck Co., Cortland, N. Y.
 Clydesdale Motor Truck Co., Clyde, O.
 Commerce Motor Trk. Co., Ypsilanti, Mich.
 Diamond T. Motor Car Co., Chicago.
 Federal Motor Truck Co., Detroit.
 Four Wheel Drive Auto Co., Clintonville, Wis.
 Garford Truck Co., Lima, O.
 Gramm Bernstein Tr. Corp., Lima, O.
 Gramm & Kincaid Motors, Inc., Lima, O.
 The Hug Co., Highland, Ill.
 Indiana Truck Corp., Marion, Ind.
 Int. Harvester Co., Chicago.
 Kelly Springfield Motor Truck Co., Springfield, O.
 Larrabee-Deyo Motor Tr. Co., Binghamton, N. Y.
 Pierce-Arrow Motor Car Co., Buffalo.
 Republic Truck Sales Corp., Alma, Mich.
 Service Motor Tr. Co., Wabash, Ind.
 Standard Motor Truck Co., Detroit.
 Sterling Motor Truck Co., Milwaukee.
 Stewart Motor Tr. Co., Buffalo, N. Y.
 Traffic Motor Tr. Co., St. Louis, Mo.
 United Motor Products Co., Grand Rapids, Mich.
 U. S. Motor Truck Co., Cincinnati, O.
 White Co., Cleveland, O.

Indicates that the manufacturer carries an advertisement. See index facing inside back cover.



Through 19 to 24 Inches of Frost with The "Ditcher that Couldn't Be Built"

Frozen ground cannot stop the "Ditcher that couldn't be built."

For instance, a public utility company, in Illinois, writes:

"—One of our machines dug continually in December and January in from 19 to 24 inches of frost—. Even under this extreme condition the machine turned out from 400 to 600 feet per nine hour day—."

A Montreal user tells us that the Barber-Greene crew is the last to hibernate in the face of severe Canadian winters.

Again, on a Chicago job, last February, a Barber-Greene dug 500 feet through frozen ground

during its first day on a job that the contractor had almost given up as hopeless till spring.

Only the Barber-Greene has the vertical boom that makes such phenomenal digging in frozen ground possible.

The vertical boom provides the famous "milling action" digging.

It doesn't shovel—it cuts, like a machine tool. And it digs straight through the frost in the shortest possible line.

And the patented Overload Release provides a constant safety factor which carries the Barber-Greene through frozen ground without danger of damage.

If you'd like to cut trench this winter, send for a copy of "Cutting Mains and Services." It gives details on what the Barber-Greene is doing. And if you'd like to put your prize picks and shovels—or another ditcher—up against the Barber-Greene on summer work—you'll be able to start that fight with the facts and figures in "Cutting Mains and Services."

BARBER-GREENE CO., 485 W. Park Ave., Aurora, Ill.

Representatives in 50 Cities

BARBER GREENE DITCHER

VERTICAL BOOM

Only the Barber-Greene has the vertical boom that provides the machine with "milling" action digging.

SNOW-LOADERS CONVEYORS BUCKET-LOADERS

OVERLOAD RELEASE SPROCKET

Only Barber-Greene has the patented automatic release sprocket that protects both the Barber-Greene and what it encounters underground.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

MOULDS, CONCRETE

*Blaw Knox Co., Pittsburgh, Pa.
Haber & Lang Mfg. Co., Kendallville, Ind.

MUCKING MACHINES

Hear Shovel Co., Duluth, Minn.

NUMBERS HOUSE (See House Numbers)

OAKUM

Oxweld Acetylene Co., Long Island City, N. Y.

OIL BURNERS

*Aeroll Burner Co., Union Hill, N. J.
*Chausse Oil Burner Co., Elkhart, Ind.
*Hauk Mfg. Co., B'klyn, N. Y.
*Alex. Milburn Co., Baltimore, Md.
Binks Spray Equip. Co., Chicago

OILS, ROAD

*Barber Asphalt Co., Phila., Pa.
*Barrett Co., N. Y.
*Standard Oil Co. (Indiana), Chicago.
*Texas Company, N. Y.
Atl. Ref. & Asp. Corp., Phila., Pa.
Headley Good Roads Co., Phila., Pa.
Pioneer Asp. Co., Lawrenceville, Ill.
Standard Oil Co. (La.), N. Orleans, La.
Standard Oil Co. (N. J.), Newark, N. J.
Standard Oil Co. (N. Y.), N. Y.

OKY-ACETYLENE APPARATUS

*Alex. Milburn Co., Baltimore, Md.
Oxweld Acetylene Co., Long Island City, N. Y.

PACKING, WATER PIPE

*Union Water Meter Co., Worcester, Mass.
The Leadite Co., Phila., Pa.
United Lead Company, N. Y.

PAINT GUNS

*Alex. Milburn Co., Baltimore, Md.
Binks Spray Eq. Co., Chicago
Chicago Pneum. Tool Co., New York
De Vilbiss Mfg. Co., Toledo, O.
Eclipse Air Brush Co., Newark, N. J.
W. N. Matthews Corp., St. Louis
Paasche Air Brush Co., Chicago
Simons Paint Spray Brush Co., Dayton, O.
Spraco Painting Equip. Co., Boston

PAINTS, METAL PROTECTION

*Barber Asphalt Co., Phila., Pa.
*Barrett Co., N. Y.
*Philip Carey Co., Cincinnati, O.
*Jos. Dixon Crucible Co., J. City, N. J.
*Solvay Process Co., N. Y.
Acme White Ld. & Col. Wks., Detroit.
Berry Bros., Detroit.
Cook Paint & Varnish Co., K. City, Mo.
Detroit Graphite Co., Detroit.
Detroit White Lead Wks., Detroit.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
Minwax Co., N. Y.
Protexol Corp., N. Y.
Ruberoid Co., N. Y.
Servicised Products Corp'n, Chicago
Sherwin-Williams Co., Cleveland, O.
L. Sonneborn Sons, Inc., N. Y.
Toch Bros., N. Y.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit.

PAPERS, BLUE PRINT

Ind'p'ls Blue Print & Supply Co., Ind'p'ls, Ind.

PAPER, BUILDING, ROOFING, ETC.

*Barber Asphalt Co., Phila., Pa.
*Philip Carey Co., Cincinnati, O.
*Barrett Co., N. Y.
Bird & Sons, Inc., E. Walpole, Mass.
Brown Co., Portland, Me.
Hydrox Asph. Prod. Corp., N. Y.
Johns-Manville, Inc., N. Y.
Nat. Roofing Co., Tonawanda, N. Y.
Ruberoid Co., N. Y.

PARK BENCHES

*Stewart Iron Wks. Co., Cincinnati, O.

Bausman Mfg. Co., Millersville, Pa.
Logan Co., Louisville, Ky.
Fred J. Meyers Mfg. Co., Hamilton, O.

PAVEMENT BREAKERS (See Breakers)

PAVING AND ROAD ROLLERS. (See Road and Paving Rollers)

PAVING BLOCKS, CREOSOTED WOOD. (See "Creosoted Blocks")

PAVING BRICK

Alton Brick Co., Alton, Ill.
Binghamton Br. Co., Binghamton, N.Y.
Buckeye Shale Brick Co., Cleveland, O.
Buffalo Brick Co., Buffalo, Kans.
Cen. Clay Prod. Co., Wilkes-Barre, Pa.
Cleveland Brick & Clay Co., Cleveland, O.
Clydesdale Brick & Stone Co., Pittsburgh, Pa.
Collinwood Shale Brick Co., Cleveland, O.
Corry Brick & Tile Corp., Corry, Pa.
Georgia Vit. Brick Co., Augusta, Ga.
Globe Brick Co., E. Liverpool, O.
Hammond Fire Brick Co., Fairmount, W. Va.
Hixsylvania Coal Co., Columbus, O.
Hocking Val. Brick Co., Columbus, O.
Layton Fire Clay Co., McKeesport, Pa.
McAvey Vit. Brick Co., Phila., Pa.
O. P. Mayer Brick Co., Bridgeville, Pa.
Metropolis Pav. Br. Co., Pitts'b, Kan.
Metropolitan Pav. Br. Co., Canton, O.
Mineral Wells Pav. Br. Co., Mineral Wells, Tex.
Moberly Pav. Br. Co., Moberly, Mo.
Murphysboro Pav. Brick Co., Murphysboro, Ill.
Nelsonville Brick Co., Nelsonville, O.
Patton Clay Mfg. Co., Patton, Pa.
Paxton Brick Co., Watsontown, Pa.
Peabody Pav. Br. Co., Portsmouth, O.
Peoria Brick & Tile Co., Peoria, Ill.
Purinton Pav. Br. Co., Galesburg, Ill.
Russell Clay Mfg. Co., Alton, Ala.
So. Clay Mfg., Chattanooga, Tenn.
Spfld. Pav. Br. Co., Springfield, Ill.
Sterling Brick Co., Olean, N. Y.
Streator Clay Mfg. Co., Streator, Ill.
Terre Haute Vit. Brick Co., Terre Haute, Ind.
Thornton Fire Brick Co., Clarksburg, W.V.
Thurber Brick Co., Thurber, Tex.
Toronto Fire Clay Co., Toronto, O.
Trinidad Br. & Tile Co., Trinidad, O.
United Clay Prod. Corp., Kansas City
Veederburg Paver Co., Veederburg, Ind.
West'n Shale Prod. Co., Ft. Scott, Kan.
Westport Pav. Br. Co., Westport, Md.

PAVING MACHINERY (See Road and Paving Machinery)

PAVING GUARDS, STEEL

*W. S. Godwin Co., Baltimore, Md.

PAVING MATERIALS (See "Asphalt," "Paving Brick," "Granite Block," etc.)

PAVING MIXERS (See Concrete Mixers)

PAVING TOOLS

*Aeroll Burner Co., Union Hill, N. J.
*Barber Asphalt Co., Phila., Pa.
*Chausse Oil Burner Co., Elkhart, Ind.
*Connery & Co., Inc., Phila., Pa.
*Littleford Bros. Co., Cincinnati, O.
*Union Iron Wks. Inc., Hoboken, N. J.
*Warren Bros. Co., Boston.
W. H. Anderson Tl. & Sp. Co., Detroit.
F. D. Cummer & Sons Co., Cleveland, O.

PERFORATED METALS

Allis-Chalmers Mfg. Co., Milwaukee.
Hendrick Mfg. Co., Carbondale, Pa.

PICKS

Beall Tool Co., E. Alton, Ill.

Hubbard Co., Pittsburgh, Pa.
Independent Pneum. Tool Co., Chicago
Iron City Tool Wks., Pittsburgh.
Klein-Logan Co., Pittsburgh.
Oliver Iron & Steel Co., Pittsburgh, Pa.
Verona Tool Wks., Verona, Pa.
Warren Tool & Forge Co., Warren, O.
Warwood Tool Co., Wheeling, W. Va.
Wyoming Shovel Wks., Wyoming, Pa.

PILE DRIVERS

*Clyde Ir. Wks. Sales Co., Duluth, Minn.
*McKiernan-Terry Drill Co., N. Y.
*Mead-Morrison Mfg. Co., E. Boston.
*Union Iron Wks., Inc., Hoboken, N. J.
Browning Crane Co., Cleveland, O.
Industrial Wks., Bay City, Mich.
Lidgerwood Manufacturing Co., N. Y.
McMyler Interstate Co., Cleveland, O.

PILE HAMMERS, STEAM

*Clyde Ir. Wks. Sales Co., Duluth, Minn.
*McKiernan-Terry Drill Co., N. Y.
*Union Iron Wks., Inc., Hoboken, N. J.
Industrial Wks., Bay City, Mich.
Ntl. Hoisting Eng. Co., Harrison, N. J.
Vulcan Iron Wks., Chicago.

PILING, CONCRETE

MacArthur Conc. Pile & F'd'n Co., N.Y.
Raymond Conc. Pile Co., N. Y.

PILING, INTERLOCKING STEEL

Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., Pittsburgh, Pa.

PIPE, CAST IRON

*U. S. Cast Iron Pipe & Fdry. Co., Burlington, N. J.
Am. Cast Ir. Pipe Co., Birmingham, Ala.
Central Fdry. Co., N. Y.
J. B. Clow & Sons, Chicago.
Donaldson Iron Co., Emsau, Pa.
John Fox & Co., N. Y.
Glamorgan Pipe & Fdry. Co., Lynchburg, Va.
Lynchburg Fdry. Co., Lynchburg, Va.
McWane C. I. Pipe Co., Birmingham, Ala.
Nat. C. I. Pipe Co., Birmingham, Ala.
Warren Fdry. & Machine Co., N. Y.
R. D. Wood & Co., Phila., Pa.

PIPE, CULVERT (See Culverts)

PIPE, LEAD

United Lead Company, N. Y.

PIPE, REINFORCED CONCRETE

*Newark Conc. Pipe Co., Newark, N. J.
Concrete Prod. Co., Pittsburgh, Pa.
Core Joint Conc. Pipe Co., Baltimore.
Independent Conc. Pipe Co., Indianapolis.
Lock Joint Pipe Co., E. Orange, N. J.
Massey Conc. Prod. Corp., Chicago.

PIPE, RIVETED STEEL OR IRON

*Blaw-Knox Co., Pittsburgh, Pa.
*Connery & Co., Inc., Phila., Pa.
*Jos. Honhorst Co., Cincinnati, O.
*Littleford Bros., Cincinnati, O.
Abendroth & Root Mfg. Co., Newburg, N.Y.
American Spiral Pipe Wks., Chicago.
Canton Culvert & Sile Co., Canton, O.
Chatta. Boiler & Tk. Co., Chatta., Tenn.
Chicago Bridge & Ir. Wks., Chicago.
E. Jersey Pipe Co., N. Y.
Hammond Ir. Wks., Warren, Pa.
R. Hardesty Mfg. Co., Denver.
Lancaster Iron Wks., Lancaster, Pa.
Petroleum Ir. Wks. Co., Sharon, Pa.
Pittsburgh-Des Moines Sll. Co., Pittsburgh, Pa.
Tippet & Wood, Phillipsburg, N. J.
Weiler Mfg. Co., Chicago.

If you find any errors or omissions in this Where to Purchase list, please send corrections to
CONTRACTORS' & ENGINEERS' MONTHLY



Nation-Wide SERVICE

for "Caterpillar" owners

Within your convenient reach is a "Caterpillar" dealer through whom you can quickly get necessary replacement parts and satisfactory service.

Parts are available for "Caterpillar"
Tractors of any age or size.

There is a "Caterpillar" Dealer near you

CATERPILLAR TRACTOR CO.

Executive Offices: San Leandro, California, U. S. A.
Factories: Peoria, Illinois - San Leandro, California
New York Office: 50 Church Street

Successor to

BEST G. L. Best The Holt Manufacturing Company HOLT
Tractor Co.

"Caterpillar" Tractor Prices

2-TON . . . \$1850
(Peoria, Illinois)

5 TON . . . \$3250
(Peoria, Illinois)

THIRTY . . . \$3000
(Peoria or San Leandro)

SIXTY . . . \$5000
(Peoria or San Leandro)

Better • Quicker
Cheaper

91A-1026

CATERPILLAR

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

PIPE, SPIRAL RIVETED

Abendroth & Root Mfg. Co., Newburg, N. Y.
American Spiral Pipe Wks., Chicago

PIPE, STEEL

Central Tube Co., Pittsburgh, Pa.
E. Jersey Pipe Co., N. Y.
Jones & Laughlin Stl. Co., Pittsburgh.
National Tube Co., Pittsburgh
Republic Ir. & Stl. Co., Youngstown, O.
South Chester Tube Co., Chester, Pa.
Spang-Chalfont & Co., Pittsburgh, Pa.
Wheeling Stl. Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, WOOD

Amer. Wood Pipe Co., Tacoma, Wash.
Cascades Pipe & Plume Co., Seattle, Wash.
Federal Tank & Pipe Co., Seattle, Wash.
Mich. Pipe Co., Bay City, Mich.
Pacific Tank & Pipe Co., S. Francisco.
Redwood Mfrs. Co., S. Francisco.
Standard Wd. Pipe Co., Williamsport, Pa.
A. Wyckoff & Sons Co., Elmira, N. Y.

PIPE, WROUGHT IRON

A. M. Byers Co., Pittsburgh, Pa.
Reading Iron Co., Reading, Pa.

PIPE BENDING MACHINES

Am. Pipe Bending Mach. Co., Boston.
Walworth Mfg. Co., Boston.

PIPE COVERING

AIRCCELL

*Philip Carey Co., Cincinnati, O.
Ehret Mag. Mfg. Co., Valley Forge, Pa.
Johns-Manville, Inc., N. Y.
Kearney & Mattison Co., Ambler, Pa.
Ntl. Asbestos Co., Jersey City, N. J.
Norristown Mag. & Asb. Co., Norristown, Pa.
Sall Mountain Co., Chicago
H. F. Watson Co., Erie, Pa.

85 PER CENT MAGNESIA

*Philip Carey Co., Cincinnati, O.
Ehret Mag. Co., Valley Forge, Pa.
Johns-Manville, Inc., N. Y.
Kearney & Mattison Co., Ambler, Pa.

WOOD

Redwood Mfrs. Co., San Francisco.
Ric-Wil Co., Cleveland, O.
A. Wyckoff & Son Co., Elmira, N. Y.

PIPE CUTTERS (See Cutters, Pipe, Hand)

PIPE FITTINGS

*U. S. Cast Iron Pipe & Fdry. Co., Burlington, N. J.
Amer. C. I. Pipe Co., Birmingham, Ala.
Builders Iron Fdry., Providence, R. I.
Central Fdry. Co., N. Y.
J. B. Clow & Sons, Chicago.
Crane Co., Chicago.
Donaldson Iron Co., Emsau, Pa.
Lunkenheimer Co., Cincinnati, O.
Ntl. C. I. Pipe Co., Birmingham, Ala.
Reading Stl. Casting Co., Inc., Bridgeport, Conn.
Warren Fdry. & Mach. Co., N. Y.
R. D. Wood & Co., Phila., Pa.

PIPE HANDLING MACHINERY

Mueller Company, Decatur, Ill.
Squier-Rix Co., Milwaukee.
Taylor Port. Stl. Derrick Co., Chicago.

PIPE JOINT COMPOUND (Sewer)

*Philip Carey Co., Cincinnati, O.
*Pacific Flash Tank Co., Chi. and N. Y.
O. E. Sales Co., Macungie, Pa.
Leadite Company, Inc., Phila., Pa.
Raberoid Co., N. Y.

Waring-Underwood Co., Phila., Pa.

PIPE JOINT MATERIAL (Cast Iron)

Hydraulic Development Co., Boston.
The Leadite Co., Phila., Pa.
United Lead Co., N. Y.

PLAYGROUND APPARATUS

American Playground Device Co., Anderson, Ind.
Chicago Gym. Equip. Co., Chicago.
Everwear Mfg. Co., Springfield, O.
Giant Mfg. Co., Council Bluffs, Ia.
Hill-Standard Co., Anderson, Ind.
Fred. Medart Mfg. Co., St. Louis, Mo.
Mitchell Mfg. Co., Milwaukee.
Patterson-Williams Co., San Jose, Cal.
Playground Equipment Co., N. Y.
A. G. Spalding & Bros., Chicopee, Mass.
F. B. Zieg Mfg. Co., Fredericktown, O.

PLOWS, CONTRACTORS'

*Austin-West'n Rd. Mach. Co., Chicago.
*Burch Plow Wks. Co., Crestline, O.
*Caterpillar Trac. Co., San Leandro, Cal.
*Gallon Ir. Wks. & Mfg. Co., Gallon, O.
*Roderick Loan Mfg. Co., Mansfield, O.
*Russell Grader Mfg. Co., Minneapolis.
*Wiard Plow Co., Batavia, N. Y.
J. D. Adams & Co., Indianapolis, Ind.
American Steel Scraper Co., Sidney, O.
Deere & Co., Moline, Ill.
C. D. Edwards Mfg. Co., Albert Lea, Minn.
International Harvester Co., Chicago.
Moline Plow Co., Rock Island, Ill.
Oliver Chilled Plow Wks., S. Bend, Ind.
Sidney Steel Scraper Co., Sidney, O.
Slusser-McLean Scraper Co., Sidney, O.
Western Wheeled Scraper Co., Aurora, Ill.

PLUMBING SUPPLIES

J. B. Clow & Sons, Chicago.
Crane Co., Chicago.
Gleicher Brass Mfg. Co., Cleveland, O.
J. L. Mott Iron Wks., N. Y.
Mueller Company, Decatur, Ill.
Rundle-Spence Mfg. Co., Milwaukee.
Walworth Mfg. Co., Boston.

POLES, STEEL STRUCTURAL

*Blaw-Knox Co., Pittsburgh, Pa.
Elec. Ry. Equip. Co., Cincinnati, O.
Pittsb'g-Des Moines Stl. Co., Pittsb'g.

PORTABLE BUILDINGS

*Blaw-Knox Co., Pittsburgh, Pa.
*Littleford Bros., Cincinnati, O.
*Trascon Steel Co., Youngstown, O.
Milwaukee Corr. Co., Milwaukee, Wis.

PORTABLE STEEL DERRICKS (See Derrick, Steel Portable)

PORTABLE WOOD WORKERS

Jaeger Portable Power Corp., Detroit

PORTLAND CEMENT (See Cement)

POWDER (See Explosives)

POWER PLANTS, INDUSTRIAL

*Alamo Engine Co., Hilldale, Mich.
*Climax Eng. Co., Clinton, Ia.
*Continental Motors Corp., Detroit, Mich.
*Hercules Corp., Evansville, Ind.
*Hercules Motors Corp., Canton, O.
*Waukesha Motor Co., Waukesha, Wis.
Buda Co., Harvey, Ill.
Hinkley Motors, Inc., Detroit
Sanderson-Cyclone Drill Co., Orrville, O.
Wisconsin Motor Co., Milwaukee

PULLING MACHINES

John Waldron Corp., New Brunswick, N. J.

PUMPS, AIR LIFT

*American Steam Pump Co., Battle Creek, Mich.
*Ingersoll-Rand Co., N. Y.
*Sullivan Mach. Co., Chicago.

Chicago Pneum. Tool Co., New York
Harris Air Pump Co., Indianapolis.
Indiana Air Pump Co., Indianapolis.

PUMPS, BOILER FEED

*American Steam Pump Co., Battle Creek, Mich.
*Ingersoll-Rand Co., New York
Allis-Chalmers Mfg. Co., Milwaukee.
Aurora Pump & Mfg. Co., Aurora, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Stm. Pump Co., Buffalo, N. Y.
A. S. Cameron Stm. Pump Wks., N. Y.
Chicago Pump Co., Chicago
Dayton-Dowd Co., Quincy, Ill.
Dean Bros. Co., Indianapolis, Ind.
Dean Hill Pump Co., Anderson, Ind.
De Laval Stm. Turb. Co., Trenton, N. J.
Deming Co., Salem, O.
Erie Pump & Eng. Wks., Medina, N. Y.
Fairbanks, Morse & Co., Chicago.
Gardner Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Indiana Air Pump Co., Indianapolis.
LeCourtenay Co., Newark, N. J.
Morris Mach. Wks., Baldwinville, N. Y.
Murray Iron Wks. Co., Burlington, Ia.
Northern Fire App. Co., Minneapolis
Rumsey Pump Co., Seneca Falls, N. Y.
Scranton Pump Co., Scranton, Pa.
Union Stm. Pump Co., Battle Creek, Mich.
Vogt Bros. Mfg. Co., Louisville, Ky.
Warren Stm. Pump Co., Warren, Mass.
Weinman Pump Mfg. Co., Columbus, O.
Yeomans Bros. Co., Chicago.

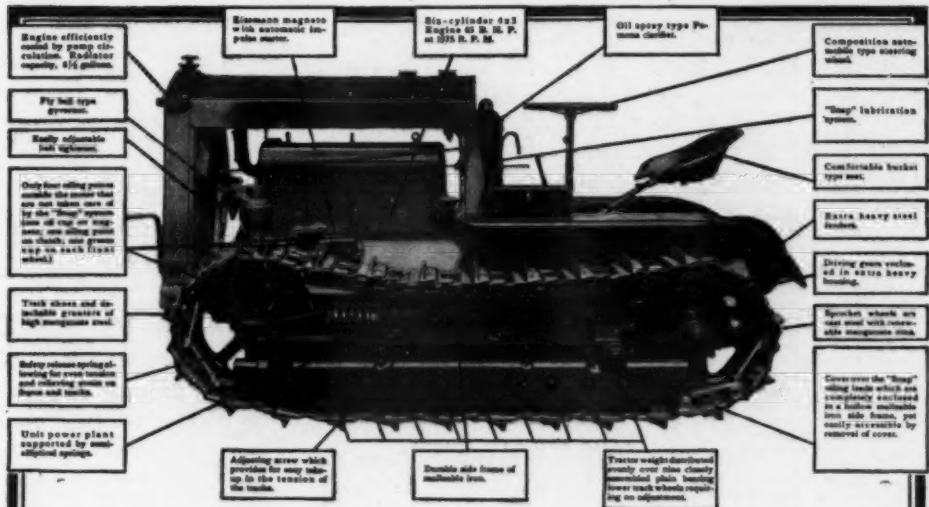
PUMPS, CENTRIFUGAL

*American Steam Pump Co., Battle Creek, Mich.
*Domestic Eng. & Pump Co., Shippensburg, Pa.
*Humphreys Mfg. Co., Mansfield, O.
*Ingersoll-Rand Co., New York
*Keystone Driller Co., Beaver Falls, Pa.
*Novo Eng. Co., Lansing, Mich.
*Schramm, Inc., West Chester, Pa.
Allis-Chalmers Mfg. Co., Milwaukee.
Amer. Well Works, Aurora, Ill.
Aurora Pump & Mfg. Co., Aurora, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
A. S. Cameron Stm. Pump Wks., N. Y.
Chicago Pump Co., Chicago
Dayton-Dowd Co., Quincy, Ill.
De Laval Stm. Turb. Co., Trenton, N. J.
Erie Pump & Eng. Wks., Medina, N. Y.
Fairbanks, Morse & Co., Chicago.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Indiana Air Pump Co., Indianapolis.
LeCourtenay Co., Newark, N. J.
Manistee Iron Wks., Manistee, Mich.
Morris Mach. Wks., Baldwinville, N. Y.
Rumsey Pump Co., Seneca Falls, N. Y.
United Iron Wks., Inc., K. City, Mo.
Wheeler Condenser & Eng. Co., Carteret, N. J.
Worthington Pump & Mch. Corp., N. Y.
Yeomans Bros. Co., Chicago.

PUMPS, CONTRACTORS'

*American Steam Pump Co., Battle Creek, Mich.
*C. H. & E. Mfg. Co., Milwaukee
*Domestic Eng. & Pump Co., Shippensburg, Pa.
*Humphreys Mfg. Co., Mansfield, O.
*Ingersoll-Rand Co., New York
*Novo Engine Co., Lansing, Mich.
*Schramm, Inc., West Chester, Pa.
*T. L. Smith Co., Milwaukee
*Standard Scale & Supply Co., Pittsburgh
*Waukesha Motor Co., Waukesha, Wis.
Allis-Chalmers Mfg. Co., Milwaukee.
Amer. Well Wks., Aurora, Ill.
Aurora Pump & Mfg. Co., Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Buda Co., Harvey, Ill.
A. S. Cameron Stm. Pump Wks., N. Y.
Ralph B. Carter Co., N. Y.

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*



Announcing

MODEL "A," 30-45 H. P.

Cletrac

A SIX-CYLINDER tractor—of advanced design and highest quality construction. Built for heavy duty service. Designed primarily for road work. Establishes a new standard of efficiency in the high percentage of pounds pull delivered at drawbar! Handles full loads on turns as efficiently as on straight-away going! Easy to handle. Easy to steer. Easy to service. All plain bearing lower track wheels perfectly lubricated at the push of a plunger—while tractor is in motion.

Like Model "K" Cletrac, Model "A" is a tractor stripped for action. Handles the heavier power jobs with speed and certainty—and at low operation cost. A year-round tractor. 1800 square inches of tractive surface means no slippage over any footing! Six-cylinder motor insures greater economy—less vibration—smoother operation—faster acceleration.

Road Contractors, Highway Departments and Municipalities have been eagerly awaiting this year-round tractor of advanced design. Sales prove it! Here is strength, endurance, and power efficiency never before attained in tractors of similar rating. Write or mail coupon for full details.

The Cleveland Tractor Co., Cleveland, Ohio

Cletrac Crawler Tractors are unequalled for snow removal. Write for list of cities using Cletracs for this important work.

THE CLEVELAND TRACTOR CO., Cleveland, Ohio.

■ Please send me details of the

☐ Cletrac "A" 30-45 h.p. ☐ Cletrac "K" 15-25 h.p.

Name

Address

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

Construction Mch. Co., Waterloo, Ia.
Dayton-Dowd Co., Quincy, Ill.
Deming Co., Salem, O.
Emerson Pump & Valve Co., Alexandria, Va.
Erie Pump & Eng. Wks., Medina, N.Y.
Fairbanks, Morse & Co., Chicago.
Goulds Pumps, Inc., Seneca Falls, N.Y.
Kinney Mfg. Co., Boston
LeCourtenay Co., Newark, N.J.
Morris Mach. Wks., Baldwinville, N.Y.
F. E. Myers & Bro. Co., Ashland, O.
Pulsometer Steam Pump Co., N. Y.
Ramsey Pump Co., Seneca Falls, N.Y.
Van Noyhays Mach. Wks., Albany, N.Y.
Waldo Bros. & Bond Co., Boston, Mass.

PUMPS, DEEP WELL

*Aldrich Pump Co., Allentown, Pa.
*American Steam Pump Co., Battle Creek, Mich.
*Domestic Eng. & Pump Co., Shippensburg, Pa.
*Humphreys Mfg. Co., Mansfield, O.
*Ingersoll-Rand Co., New York
*Keystone Driller Co., Beaver Falls, Pa.
Amer. Well Wks., Aurora, Ill.
A. S. Cameron Stm. Pump Wks., N.Y.
H. W. Clark Co., Mattoon, Ill.
A. D. Cook, Inc., Lawrenceburg, Ind.
Deming Co., Salem, O.
Fairbanks, Morse & Co., Chicago.
Goulds Pumps, Inc., Seneca Falls, N.Y.
Harris Air Pump Co., Indianapolis.
Indiana Air Pump Co., Indianapolis.
Layne & Bowler Co., Memphis, Tenn.
A. Y. McDonald Mfg. Co., Dubuque, Ia.
Midwest Eng. Co., Indianapolis, Ind.
F. E. Myers & Bro. Co., Ashland, O.
Rumsey Pump Co., Seneca Falls, N.Y.
United Iron Wks., Inc., N. City, Mo.
Weber Subterranean Pump Co., N. Y.

PUMPS, DREDGING

*Ingersoll-Rand Co., New York
Am. Manganeses Sil. Co., Chicago
Ellicott Mach. Corp., Baltimore, Md.
Erie Pump & Eng. Co., Medina, N.Y.
Morris Mach. Wks., Baldwinville, N.Y.

PUMPS, GASOLINE AND OIL

*Ingersoll-Rand Co., New York
S. F. Bowser & Co., Inc., Ft. Wayne, Ind.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Kinney Mfg. Co., Boston
Wayne Tank & Pump Co., Ft. Wayne, Ind.

PUMPS, PORTABLE

*American Steam Pump Co., Battle Creek, Mich.
*Humphreys Mfg. Co., Mansfield, O.
Jaeger Portable Power Corp., Detroit

PUMPS, POWER

*American Steam Pump Co., Battle Creek, Mich.
*Domestic Eng. & Pump Co., Shippensburg, Pa.
*Humphreys Mfg. Co., Mansfield, O.
*Ingersoll-Rand Co., New York
*Kochring Co., Milwaukee, Wis.
*New Eng. Co., Lansing, Mich.
*Waukesha Motor Co., Waukesha, Wis.
Alamo Iron Wks., San Antonio, Tex.
Allis-Chalmers Mfg. Co., Milwaukee.
Amer. Well Wks., Aurora, Ill.
Aurora Pump & Mfg. Co., Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Chicago Pump Co., Chicago
Dayton-Dowd Co., Quincy, Ill.
De Laval Stm. Turb. Co., Trenton, N.J.
Deming Co., Salem, O.
Evinrude Motor Co., Milwaukee.
Fairbanks, Morse & Co., Chicago.
Gardner Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N.Y.
Indiana Air Pump Co., Indianapolis.
Kinney Mfg. Co., Boston
Lawrence Mach. Co., Lawrence, Mass.

LeCourtenay Co., Newark, N.J.
F. E. Myers & Bro. Co., Ashland, O.
Nordberg Mfg. Co., Milwaukee.
Northern Fire App. Co., Minneapolis.
Rumsey Pump Co., Seneca Falls, N.Y.
Weisman Pump Mfg. Co., Columbus, O.
Worthington Pump & Mch. Corp., N.Y.
Yeomans Bros. Co., Chicago

PUMPS, SEWAGE

*American Steam Pump Co., Battle Creek, Mich.
*Humphreys Mfg. Co., Mansfield, O.
*Ingersoll-Rand Co., New York
*Pacific Flush Tank Co., Chi. and N. Y.
Chicago Pump Co., Chicago
Sanitation Corp., N. Y.
Yeomans Bros. Co., Chicago.

PUMPS, TAIL AND ASPHALT

Kinney Mfg. Co., Boston

RADIATORS FOR GASOLINE ENGINES

Fedders Mfg. Co., Buffalo, N. Y.
G. & O. Mfg. Co., New Haven, Conn.
Harrison Rad. Wks., Lockport, N. Y.
McCord Radiator Mfg. Co., Detroit
Modine Mfg. Co., Racine, Wis.
Racine Radiator Co., Racine, Wis.

RAILS AND RAIL JOINTS

*Easton Car & Const. Co., Easton, Pa.
*Koppel Ind. Car & Equip. Co., Koppel, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Sweet's Steel Co., Williamsport, Pa.

RAILROAD DITCHERS (See Excavators, Ditch and Trench)

RECORDERS, WATER STAGE

Builders Iron Fdry., Providence, R. I.
W. & L. E. Gurley, Troy, N. Y.

REFRIGERATING MACHINERY (See Ice Making Machinery)

REINFORCING, CONCRETE (See Concrete Reinforcement)

RIVETERS, PNEUMATIC

*Ingersoll-Rand Co., N. Y.
Alliance Machine Co., Alliance, O.
Chicago Pneum. Tool Co., New York
Cleveland Pneum. Tool Co., Cleveland, O.
Hanna Eng. Works, Chicago.
Helwig Mfg. Co., St. Paul, Minn.
Independent Pneum. Tool Co., Chicago.
Wm. H. Keller, Inc., Grand Haven, Mich.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Southwark Fdry. & Mach. Co., Phila.
Watson-Stillman Co., N. Y.

RIVET SETS

*Ingersoll-Rand Co., N. Y.
Chicago Pneum. Tool Co., New York
Cleveland Pneum. Tool Co., Cleveland, O.
Dunbar Drop Forge Co., Chicago.
Independent Pneum. Tool Co., Chicago.

ROAD GRADERS

*Austin-West'n Rd. Mch. Co., Chicago.
*Baker Mfg. Co., Springfield, Ill.
*Gallen Ir. Wks. & Mfg. Co., Gallon, O.
*Good Rds. Mch. Co., Kennett Sq., Pa.
*Hadfield-Pendfield Stl. Co., Bucyrus, O.
*Russell Grader Mfg. Co., Minneapolis.
*Spears-Wells Machy. Co., Oakland, Cal.
J. D. Adams & Co., Indianapolis, Ind.
J. I. Case Threshing Mach. Co., Racine, Wis.
C. D. Edwards Mfg. Co., Albert Lea, Minn.
Gilbert Mfg. Co., Aberdeen, S. D.
Killefer Mfg. Co., Los Angeles
Lytle Chiv. & Rd. Equip. Co., Minneapolis
N. S. Monroe & Sons, Arthur, Ill.
Owensboro Ditcher & Grader Co., Owensboro, Ky.
Shaw-Enochs Tractor Co., Minneapolis
Stockland Rd. Mach. Co., Minneapolis.
Western Wheeled Scraper Co., Aurora, Ill.

ROAD OILS (See Oils, Road)

ROAD OILERS

*Austin-West'n Rd. Mch. Co., Chicago.
*Connerly & Co., Phila., Pa.
*Good Rds. Mch. Co., Kennett Sq., Pa.
*Mack Trucks, Inc., N. Y.
*Spears-Wells Mch. Co., Oakland, Cal.
F. D. Etnyre & Co., Oregon, Ill.
Kinney Mfg. Co., Boston
White Co., Cleveland, O.

ROAD SCRAPERS

*Acme Rd. Mach. Co., Frankfort, N. Y.
*Austin-West'n Rd. Mch. Co., Chicago
*Baker Mfg. Co., Springfield, Ill.
*Euclid Cr. & Hst. Co., Euclid Village, O.
*Gallen Ir. Wks. & Mfg. Co., Gallon, O.
*Good Rds. Mch. Co., Kennett Sq., Pa.
*Miami Trailer-Scraper Co., Troy, O.
*Perry Co., Sidney, Ohio
*Russell Grader Mfg. Co., Minneapolis.
*Gustav Schaefer Wagon Co., Cleveland, O.
J. D. Adams & Co., Indianapolis, Ind.
J. I. Case Threshing Mach. Co., Racine, Wis.
Gilbert Mfg. Co., Aberdeen, S. D.
Killefer Mfg. Co., Los Angeles
Lytle Chiv. & Rd. Equip. Co., Minneapolis.
Root Spring Scraper Co., Kalamazoo, Mich.
Shaw-Enochs Tractor Co., Minneapolis
Sidney Steel Scraper Co., Sidney, O.
Stockland Rd. Mch. Co., Minneapolis.
Western Wheeled Scraper Co., Aurora, Ill.

ROAD AND PAVING ROLLERS

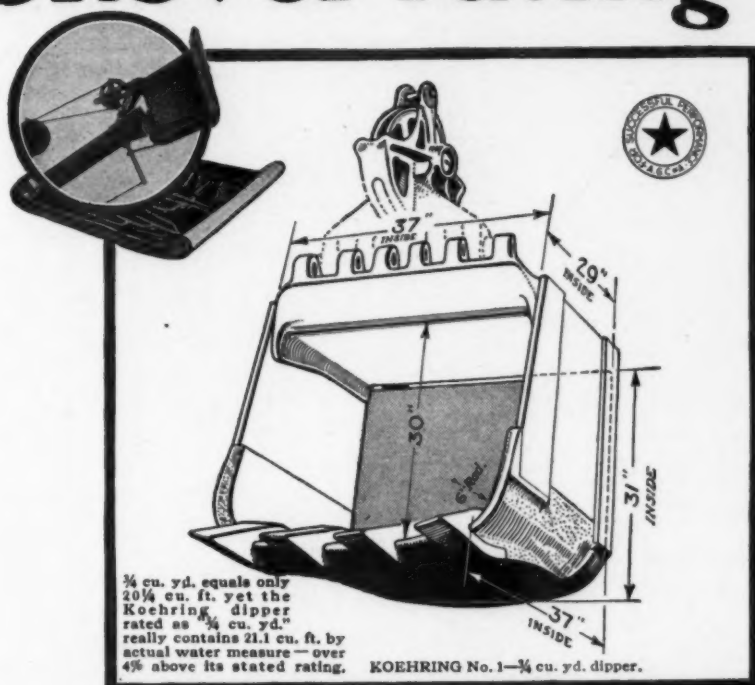
*Austin-West'n Rd. Mch. Co., Chicago.
*Barber Asphalt Co., Phila., Pa.
*Buffalo-Springfield Roller Co., Springfield, O.
*Gallen Ir. Wks. & Eng. Co., Gallon, O.
*Good Rds. Mach. Co., Kennett Sq., Pa.
*Huber Mfg. Co., Marion, O.
J. I. Case Threshing Mach. Co., Racine, Wis.
Erie Mach. Shops, Erie, Pa.
Horst & Strieter Co., Davenport, Ia.

ROAD AND PAVING MACHINERY

*Acme Rd. Mach. Co., Frankfort, N. Y.
*Atlas Eng. Co., Milwaukee.
*Austin-West'n Rd. Mch. Co., Chicago
*Baker Mfg. Co., Springfield, Ill.
*Barber Asphalt Co., Phila., Pa.
*Blaw-Knox Co., Pittsburgh, Pa.
*Buffalo-Springfield Roller Co., Springfield, O.
*Caterpillar Tractor Co., San Leandro, Cal., and Peoria, Ill.
*Chaussee Oil Burner Co., Elkhart, Ind.
*Connerly & Co., Inc., Phila., Pa.
*Easton Car & Const. Co., Easton, Pa.
*Equitable Asph. Maint. Co., K. City, Mo.
*Euclid Cr. & Hst. Co., Euclid Village, O.
*Gallen Ir. Wks. & Mfg. Co., Gallon, O.
*Good Rds. Mach. Co., Kennett Sq., Pa.
*Geo. Halse Mfg. Co., N. Y.
*Jes. Honhorst Co., Cincinnati, O.
*Kochring Co., Milwaukee.
*Lakewood Eng. Co., Cleveland, O.
*Littleford Bros., Cincinnati, O.
*Mack Trucks, Inc., N. Y.
*Russell Grader Mfg. Co., Minneapolis.
*T. I. Smith Co., Milwaukee.
*Spears-Wells Mch. Co., Oakland, Cal.
*Universal Rd. Mch. Co., Kingston, N. Y.
J. D. Adams & Co., Indianapolis, Ind.
J. I. Case Threshing Machine Co., Racine, Wis.
F. D. Cummer & Son Co., Cleveland, O.
C. D. Edwards Mfg. Co., Albert Lea, Minn.
Erie Mach. Shops, Erie, Pa.
J. D. Farsey Co., Cleveland, O.
Gilbert Mfg. Co., Aberdeen, S. Dak.
Gilde Rd. Mch. Co., Minneapolis.
The Hug Co., Highland, Ill.
Killefer Mfg. Co., Los Angeles

If you find any errors or omissions in this Where to Purchase list, please send corrections to
CONTRACTORS' & ENGINEERS' MONTHLY

Does dipper capacity mean Anything to Shovel rating?



AS an example of Koehring conservatism in rating capacities, compare the dimensions of the Koehring 3/4 yard shovel dipper with the dipper dimensions of many shovels rated at 1 yard capacity!

Remember too that the Koehring dipper not only handles its full heaped-up load, but crowds above and beyond the end of the boom.

Because of independent cable crowd, the Koehring instantly adapts itself at the levers' command to meet every situation—long, shallow,

horizontal dipper strokes for shallow grading—deep, close-in gouges to dig out boulders, deep digging, high bank work, high or low loading, *all* are the same to the Koehring.

Shovel Capacities

No. 1—3/4 cu. yd. dipper, struck measure, on 19 ft. 6 in. boom, with 16 ft. dipper sticks; 4 cyl. 5 x 6 in. gasoline engine, 1100 R. P. M.

No. 2—1 1/4 cu. yd. dipper, struck measure, on 20 ft. 7 in. boom, with 16 ft. dipper sticks; 4 cyl., 6 x 7 in. gasoline engine, 925 R. P. M.

Send for Shovel Bulletin No. 3-6

KOEHRING COMPANY MILWAUKEE WISCONSIN

PAVERS, MIXERS—GASOLINE SHOVELS, CRANES AND DRAGLINES

Sales Offices and Service Warehouses in all principal cities

Foreign Dept., Room 1370, 30 Church St., New York City.

Canada, Koehring Company of Canada, Limited, 105 Front St., East, Toronto, Ontario.

Mexico, F. S. Lapum, Cinco De Mayo 21, Mexico, D. F.

A3208-III



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

Kinney Mfg. Co., Boston
Lyle Cult. & Rd. Equip. Co., Minneapolis.

N. S. Monroe & Sons, Arthur, Ill.
Shaw-Enoch Tractor Co., Minneapolis
Stockland Rd. Mch. Co., Minneapolis
United Iron Wks., Inc., K. City, Mo.

ROCK CRUSHERS AND PULVERIZERS (See "Crushers")

ROCK DRILLS (See Drills, Rock)

ROOFING, ASPHALT, COMPOSITION, TILE, ETC.

*Barber Asphalt Co., Phila., Pa.
*Barrett Co., N. Y.
*Philip Carey Co., Cincinnati, O.
*Standard Oil Co. (Indiana), Chicago.
*Texas Co., N. Y.
Amer. Cem. Tile Mfg. Co., Pittsburgh.
Atlantic Ref. & Asph. Corp., Phila., Pa.
Beaver Prod. Co., Inc., Buffalo, N. Y.
Bird & Son, Inc., E. Walpole, Mass.
Certain-teed Products Corp., N. Y.
Chaffield Mfg. Co., Cincinnati, O.
Edwards Mfg. Co., Cincinnati, O.
Flinthote Co., Boston.
Johns-Manville, Inc., N. Y.
Keystone Roofing Mfg. Co., York, Pa.
The Lehon Co., Chicago.
F. J. Lewis Mfg. Co., Chicago.
Nat'l Roofing Co., Tonawanda, N. Y.
Ruberoid Co., N. Y.
Sall Mountain Co., Chicago.
Sifo Prod. Co., St. Paul, Minn.
L. Sonneborn & Sons, Inc., N. Y.
Western Elaterite Roofing Co., Denver.

ROOFING, METAL

*Truscon Steel Co., Youngstown, O.
Amer. Rolling Mill Co., Middletown, O.
Amer. Sheet & Tin Plate Co., Pitts'h.
Berger Mfg. Co., Canton, O.
Edwards Mfg. Co., Cincinnati, O.
Klauser Mfg. Co., Dubuque, Ia.
Milwaukee Corr. Co., Milwaukee
Nat'l Sheet Metal Roofing Co., J. City, N. J.
United Alloy Steel Corp., Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

ROOFING KETTLES (See Kettles)

ROPE, MANILA

Amer. Mfg. Co., B'klyn, N. Y.
Columbian Rope Co., Auburn, N. Y.
Cupples Cordage Co., B'klyn, N. Y.
Hooven & Allison Co., Xenia, O.
R. A. Kelly Co., Xenia, O.
N. Bedford Cordage Co., N. Bedford, Mass.
Peoria Cordage Co., Peoria, Ill.
Plymouth Cordage Co., N. Plymouth, Mass.
Portland Cordage Co., Portland, Ore.
Tubbs Cordage Co., San Francisco.
Wall Rope Wks., N. Y.
Waterbury Co., N. Y.
Whitlock Cordage Co., N. Y.

ROPE, WIRE, HOISTING, HAULAGE

*W'msport Wire Rope Co., W'msport, Pa.
Amer. Cable Co., Inc., N. Y.
Amer. Steel & Wire Co., Chicago.
Broderick & Bascom Rope Co., St. Louis, Mo.
A. Leachen & Sons Rope Co., St. Louis.
Fischer & Hayes Rope & Steel Co., Chicago.
Macwhyrte Co., Kenosha, Wis.
J. A. Roebbling's Sons Co., Trenton, N.J.
Upson-Walton Co., Cleveland, O.
Waterbury Co., N. Y.
Wickwire Spencer Steel Co., N. Y.

RUBBER TIRES (See Tires)

RULES

*Larkin Rule Co., Saginaw, Mich.

SALAMANDERS

*Littleford Brothers, Cincinnati, O.

SAFETY TREADS (See Treads, Safety)

SASH, ROLLER STEEL (See Window Frames and Sash)

SAW RIGS, PORTABLE

*Amer. Saw Mill Mach. Co., Hackettstown, N. J.
*C. H. & E. Mfg. Co., Milwaukee
Beach Mfg. Co., Montrose, Pa.
Knickerbocker Co., Jackson, Mich.
Leach Co., Oakbrook, Wis.
Jones Superior Mach. Co., Chicago.

SAWS, HAND, ELECTRIC

*F. L. Rogers & Co., Chicago
Electro-Magnetic Tool Co., Chicago
Fierway Corp., Cincinnati, O.
Michel Elec. Hand Saw Co., Chicago
Wodack Elec. Tool Corp., Chicago

SCARIFIERS

*Acme Rd. Mach. Co., Frankfort, N. Y.
*Austin-West'n Rd. Mch. Co., Chicago.
*Barber Asphalt Co., Phila., Pa.
*Buffalo-Springfield Roller Co., Springfield, O.
*Gallon Ir. Wks. & Mfg. Co., Gallon, O.
*Good Eds. Mach. Co., Kennett Sq., Pa.
*Huber Mfg. Co., Marion, O.
*Russell Grader Mfg. Co., Minneapolis.
*Universal Rd. Mch. Co., Kingston, N.Y.
C. D. Edwards Mfg. Co., Albert Lea, Minn.

SCARIFIERS, TETH FOR

*Gallon Ir. Wks. & Mfg. Co., Gallon, O.
*Russell Grader Mfg. Co., Minneapolis.
Skunk Mfg. Co., Bucyrus, O.

SCRAPERS, DRAGLINE

*Jackson Mfg. Co., Harrisburg, Pa.
*Russell Grader Mfg. Co., Minneapolis
*Sauerman Bros., Chicago
Schofield-Burkett Const'n Co., Macon, Ga.

SCRAPERS, POWER DRAG

*Russell Grader Mfg. Co., Minneapolis
*Sauerman Bros., Chicago
Schofield-Burkett Const'n Co., Macon, Ga.

SCRAPERS, ROAD (See Road Scrapers)

SCRAPERS, SELF-LOADING

*Baker Mfg. Co., Springfield, Ill.
*Euclid Cr. & Hst. Ct., Euclid Village, O.
*Miami Trailer-Scraper Co., Troy, O.
*Russell Grader Mfg. Co., Minneapolis
Shaw-Enoch Tractor Co., Minneapolis

SCREENS, SAND, GRAVEL AND COAL

*Atlas Eng. Co., Milwaukee, Wis.
*Austin-Western Rd. Mch. Co., Chicago
*Gallon Ir. Wks. & Mfg. Co., Gallon, O.
*Good Roads Mch. Co., Kennett Sq., Pa.
*Hais Mfg. Co., N. Y.
*Littleford Bros., Cincinnati, O.
*Russell Grader Mfg. Co., Minneapolis
*Universal Rd. Mach. Co., Kingston, N.Y.
Allis-Chalmers Mfg. Co., Milwaukee
Austin Mfg. Co., Chicago
Brown Hstg. Machy. Co., Cleveland, O.
C. O. Bartlett & Snow Co., Cleveland, O.
J. I. Case Threshing Mach. Co., Racine, Wis.

Chain Belt Co., Milwaukee, Wis.
Deister Concentrator Co., Ft. Wayne, Ind.

Gifford-Wood Co., Hudson, N. Y.
Hendrick Mfg. Co., Carbondale, Pa.
Jeffrey Mfg. Co., Columbus, O.

Link-Belt Co., Chicago
Lyle Cult. & Rd. Equip. Co., Minneapolis, Minn.

Morrow Mfg. Co., Wellston, O.
Newaygo Eng. Co., Newaygo, Mich.

New Jersey Wire Cloth Co., Trenton, N. J.

Robins Conv. Belt Co., N. Y.
H. B. Sackett Screen & Chute Co., Chicago

Webster Mfg. Co., Chicago
Weller Mfg. Co., Chicago
Wickwire Spencer Steel Co., N. Y.

SCREENS, SEWAGE

Dorr Co., New York
Green Bay Fdry. & Mach. Wks., Green Bay, Wis.
Link-Belt Co., Philadelphia.
Sanitation Corp'n., N. Y.
Simplex Ejector Co., Chicago.

SEWAGE DISPOSAL APPARATUS

*Pacific Flush Tank Co., Chicago & N. Y.
Dorr Co., N. Y.
Sanitation Corp'n., N. Y.
Simplex Ejector Co., Chicago.

SEWAGE PUMPS (See Pumps)

SEWAGE EJECTORS

*Pacific Flush Tank Co., Chicago & N. Y.
Sanitation Corp., N. Y.
Simplex Ejector Co., Chicago.
Yeomans Bros. Co., Chicago.

SEWER BLOCKS, SEGMENT

American Vit. Products Co., Akron, O.
Cannelton Sewer Pipe Co., Cannelton, Ind.
Denver Sewer Pipe & Clay Co., Denver, Col.
W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Evans & Howard Fire Brick Co., St. Louis, Mo.
Laclede Christy Clay Prod. Co., St. Louis, Mo.
Macomb Sewer Pipe Wks., Macomb, Ill.
Pacific Clay Prod. Co., L. Angeles, Cal.
Red Wing Sewer Pipe Co., Red Wing, Minn.
Robinson Clay Prod. Co., Akron, O.
Standard Fire Brick & Sewer Pipe Co., Pueblo, Col.

SEWER CLEANING APPARATUS

F. Bissell Co., Toledo, O.
Champion Corp., Hammond, Ind.
Self Propelling Nozzle Co., N. Y.
Turbine Sewer Mach. Co., Milwaukee.

SEWER PIPE AND DRAIN TILE

American Vit. Prod. Co., Akron, O.
Blackmer & Post Pipe Co., St. Louis
Wm. E. Dee Co., Chicago.
Denver Sewer Pipe & Clay Co., Denver, Col.
W. S. Dickey Clay Mfg. Co., K. City, Mo.
Logan Clay Prod. Co., Logan, O.
Ohio Vit. Pipe Co., Urbichsville, O.
Robinson Clay Prod. Co., Akron, O.

SEWER PIPE FORMS

*Holtzel Sh. Form & Ir. Co., Warren, O.
Quinn Wire & Iron Wks., Boone, Ia.
Raber & Lang Mfg. Co., Kendallville, Ind.

SEWER PIPE JOINT COMPOUNDS

*Pacific Flush Tank Co., Chicago and N.Y.
G. K. Sales Agency, Macungie, Pa.
Ruberoid Co., N. Y.
Servicised Prod. Corp., Chicago

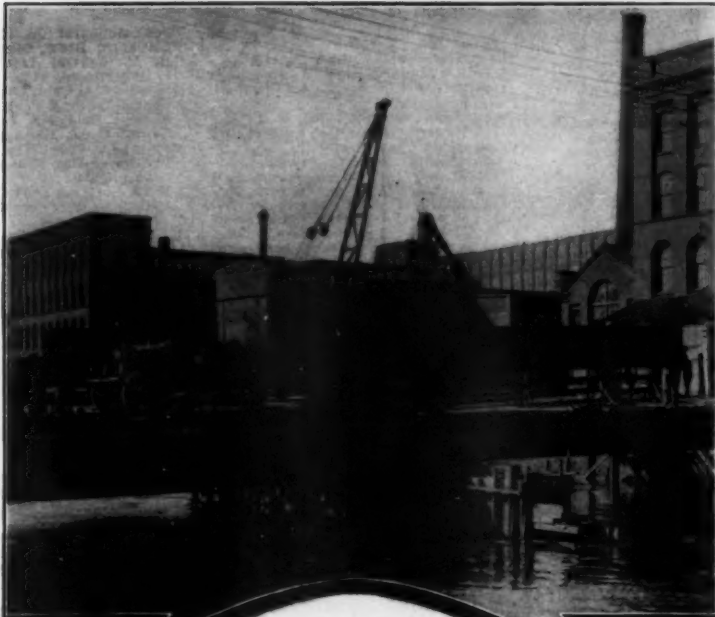
SEWER RODS

F. Bissell Co., Toledo, O.
Champion Corp., Hammond, Ind.
P. J. Healy, Jersey City, N. J.
Leak Sewer Equip. Co., Chicago
Turbine Sewer Mach. Co., Milwaukee

SHINGLES, METAL

Aluminum Co. of Am., Pittsburgh, Pa.
Berger Mfg. Co., Canton, O.
Canton Art Metal Co., Canton, O.
Edwards Mfg. Co., Cincinnati, O.
Klauser Mfg. Co., Dubuque, Ia.
Milwaukee Corrugating Co., Milwaukee.
Nat'l Sheet Metal Roofing Co., Jersey City, N. J.
Newport Rolling Mill Co., Newport, Ky.
Penn Metal Co., Boston.
Tiffin Art Metal Co., Tiffin, O.
Wheeling Metal Mfg. Co., Wheeling, W. Va.

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*



Here's
a 5 Ton

UNIVERSAL CRANE

equipped with

WILLIAMSPORT

Telfax Tape marked—Factory certified

WIRE ROPE

handling a 7-ton girder, 52 ft. long, 48 in. deep, as easy as a man piking up a piece of firewood.

The significant thing about this is the power of the crane and ease in handling—but if the manufacturer used cheap rope of uncertain tensile strength on the job, the whole apparatus might as well be cheap.

Manufacturers of good, reliable machinery are fast getting away from considering ropes of uncertain tensile strength. They are turning to "Williamsport" the only wire rope made that proves its grade by plain English evidence woven into every inch of their wire rope.

They prefer to pay a little more and be SURE; than to use unmarked ropes and GUESS on the grade. The good name of any manufacturer is not a guarantee against mistakes.

WILLIAMSPORT WIRE ROPE COMPANY

Main Office and Works:
Williamsport, Pa.

Gen'l Sales Offices:

Peoples Gas Bldg., Chicago, Ill.

USE MADESCO TACKLE BLOCKS—THEY STAND THE GAFF

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

SHORES

Dayton Sure Grip & Shore Co., Dayton, O.
 M. & M. Wire Clamp Co., Minneapolis, Minn.
 The O. D. G. Co., Owensboro, Ky.
 H. W. Ross Co., Cincinnati, O.
 Ross-Meyer-Hecht Co., Cincinnati, O.
 Symons Clamp & Mfg. Co., Chicago.
 Universal Form Clamp Co., Chicago.

SHOVELS, ELECTRIC

*Bay City Dredge Wks., Bay City, Mich.
 *Byers Mach. Co., Ravenna, O.
 *Koehring Co., Milwaukee, Wis.
 Bucyrus Co., So. Milwaukee, Wis.
 Marion Steam Shovel Co., Marion, O.
 Osgood Co., Marion, O.
 Thew Shovel Co., Lorain, O.

SHOVELS, GASOLINE

*Bay City Dredge Wks., Bay City, Mich.
 *Byers Mach. Co., Ravenna, O.
 *Harnischfeger Corp., Milwaukee, Wis.
 *Koehring Co., Milwaukee, Wis.
 *Orton Crane & Shovel Co., Chicago
 *Speer Machy. Corp., Fairfield, Ia.
 Amer. Steel Dredge Co., Ft. Wayne, Ind.
 Austin Mach. Corp., Muskegon, Mich.
 Brown Htg. Machy. Co., Cleveland, O.
 Bucyrus Co., So. Milwaukee, Wis.
 Erie Steam Shovel Co., Marion, O.
 Marion Steam Shovel Co., Marion, O.
 McMyler Interstate Co., Cleveland, O.
 Osgood Co., Marion, O.
 Thew Shovel Co., Lorain, O.

SHOVELS, HAND

American Mfg. Co., Chattanooga, Tenn.
 Ames Shovel & Tool Co., Boston.
 Beall Bros. Co., Alton, Ill.
 Conneaut Shovel Co., Conneaut, O.
 Hubbard & Co., Pittsburgh, Pa.
 Indiana Shovel Co., New Castle, Ind.
 Jackson Shovel Co., Montpelier, Ind.
 Pittsburgh Shovel Co., Pittsburgh, Pa.
 Russell Shovel Co., Aliquippa, Pa.
 Stevens-Webb Co., Inc., Altoona, Pa.
 Union Furnace Mfg. Co., Altoona, Pa.
 Wood Shovel & Tool Co., Elkhart, O.
 Wyoming Shovel Wks., Wyoming, Pa.

SHOVELS, STEAM

*Byers Mach. Co., Ravenna, O.
 *Erie Steam Shovel Co., Erie, Pa.
 *Keystone Driller Co., Beaver Falls, Pa.
 *Orton Crane & Shovel Co., Chicago
 Austin Mach. Corp., Muskegon, Mich.
 Bellwood Stm. Shovel Co., Bellwood, Pa.
 Bucyrus Co., So. Milwaukee, Wis.
 Industrial Wks., Bay City, Mich.
 Marion Steam Shovel Co., Marion, O.
 Osgood Co., Marion, O.
 Russell & Co., Massillon, O.
 Thew Shovel Co., Lorain, O.

SIDEWALK AND ROAD FORMS (See "Forms, Concrete")

SIGNS, STREET AND ROAD

Auto Sign Display Co. of Mo., St. Louis, Mo.
 Automatic Signal & Sign Co., Chicago.
 Baltimore Enam. & Nov. Co., Baltimore.
 Elkhart Fdry. & Mach. Co., Elkhart, Ind.
 Evernu-Century Sign Co., Boston.
 Ingram-Richardson Mfg. Co., Beaver Falls, Pa.
 Lyle-Signs, Minneapolis, Minn.
 Municipal Street Sign Co., N. Y.
 Rochester St. Signal Co., Rochester, N.Y.
 Standard Mfg. Co., Cedar Falls, Ia.
 Union Iron Prod. Co., E. Chicago, Ind.
 Western Stamping & Mfg. Co., St. Paul

SIGNS, TRAFFIC

*Highway Trailer Co., Edgerton, Wis.
 Acme Traffic Signal Co., Los Angeles.

Auto Sign Display Co. of Mo., St. Louis, Mo.
 Automatic Signal & Sign Co., Chicago.
 Automatic Signal & Sign Co., Canton, O.
 Amer. Gas Accumulator Co., Elizabeth, N. J.
 Crouse-Hinds Co., Syracuse, N. Y.
 Elkhart Fdry. & Mach. Co., Elkhart, Ind.
 Esaco Mfg. Co., Peoria, Ill.
 Evernu-Century Sign Co., Boston.
 Griswold Safety Signal Co., Minneapolis.
 Horn Signal Mfg. Corp., Newark, N. J.
 Line Material Co., So. Milwaukee, Wis.
 Little Giant Co., Mankato, Minn.
 Lyle-Signs, Minneapolis, Minn.
 Ohio Traffic Devices Co., Columbus, O.
 Rochester St. Signal Co., Rochester, N.Y.
 Tokheim Oil Tank & Pump Co., Ft. Wayne, Ind.
 Union Iron Prod. Co., E. Chicago, Ind.
 Universal Traffic Control Co., Oklahoma City, Okla.

SLATE, ROOFING

Stephens-Jackson Co., Pen Argyl, Pa.

SLATE, STRUCTURAL

Keenan Struct. Slate Co., Bangor, Pa.
 Penna. Struct. Slate Co., Easton, Pa.
 Phoenix Slate Co., Windgap, Pa.
 Stephens-Jackson Co., Pen Argyl, Pa.
 Structural Slate Co., Pen Argyl, Pa.

SLEEVES, TAPPING AND VALVE

Mueller Company, Decatur, Ill.
 Rensselaer Valve Co., Troy, N. Y.
 A. P. Smith Mfg. Co., East Orange, N. J.

SLUICE GATES (See Gates, Sluice)

SMOKE STACKS (See Stacks, Steel)

SNOW CLEANING MACHINERY

*Austin-Western Ed. Machy. Co., Chicago.
 *Baker Mfg. Co., Springfield, Ill.
 *Barber-Greene Co., Aurora, Ill.
 *Caterpillar Tractor Co., San Leandro, Calif. and Peoria, Ill.
 *Cleveland Tractor Co., Cleveland, O.
 *Gallon Iron Wks. & Mfg. Co., Gallon, O.
 *Good Rds. Mach. Co., Kennett Sq., Pa.
 *La Plant-Chaste Mfg. Co., Cedar Rapids, Ia.
 *Mack Trucks, Inc., N. Y.
 *Mead-Morrison Mfg. Co., E. Boston.
 *Russell Grader Mfg. Co., Minneapolis.
 C. D. Edwards Mfg. Co., Albert Lea, Minn.
 Hiway Service Corp., Wausau, Wis.
 Killefer Mfg. Co., Los Angeles, Cal.
 Monarch Tractors Corp., Springfield, Ill.
 Owensboro Ditcher & Grader Co., Owensboro, Ky.
 Rotary Snow Plow Co., Minneapolis.
 Shaw-Enochs Tractor Co., Minneapolis.
 W. M. Toy Co., Sidney, O.
 Union Iron Wks., Inc., Bangor, Me.
 Walsha Holyoke St. Blr. Wks., Holyoke, Mass.

SNOW FENCING (See Fencing)

SPADES (See Shovels)

SPRAYERS, ASPHALT AND TAR

Kinney Mfg. Co., Boston

SPRAYING MACHINERY FOR TREES

Bean Spray Pump Co., Lansing, Mich.
 Field Force Pump Co., Elmira, N. Y.
 Fitzhenry-Guptill Co., E. Cambridge, Mass.

SNOW FENCING (See Fencing)

SPREADERS, STONE

*Austin-Western Ed. Machy. Co., Chicago.
 *Burch Plow Wks. Co., Crestline, O.
 *Gallon Ir. Wks. & Mfg. Co., Gallon, O.
 *Shaw-Enochs Tractor Co., Minneapolis

STACKS, STEEL

*Blaw-Knox Co., Pittsburgh, Pa.
 *Connery & Co., Inc., Philadelphia.
 *Heil Co., Milwaukee, Wis.

*Jos. Honhorst Co., Cincinnati, O.

*Littleford Bros., Cincinnati, O.

*N. Y. Central Iron Wks. Co., Inc., Hagerstown, Md.

Birmingham Tank Co., Birmingham, Ala.

Chatta. Boiler & Tank Co., Chatta, Tenn.

Chicago Bridge & Iron Wks., Chicago.

Graver Corp., Chicago.

Petroleum Iron Wks. Co., Sharon, Pa.

Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

W. B. Scaife & Sons Co., Pittsburgh, Pa.

Walsh & Weidner Boiler Co., Chattanooga, Tenn.

STANDPIPES, TANKS AND TOWERS

W. E. Caldwell Co., Louisville, Ky.

Chatta. Blr. & Tank Co., Chatta, Tenn.

Chicago Bridge & Ir. Wks., Chicago.

Lancaster Iron Wks., Lancaster, Pa.

Pacific Tank & Pipe Co., San Francisco.

Petroleum Ir. Wks. Co., Sharon, Pa.

Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

United Iron Wks., Inc., K. City, Mo.

Walsh & Weidner Boiler Co., Chattanooga, Tenn.

STEAM SHOVELS (See Shovels, Steam)

STEAM TURBINES (See Turbines)

STEEL PLATE CONSTRUCTION

*Blaw-Knox Co., Pittsburgh, Pa.
 *Connery & Co., Philadelphia.
 *Heil Co., Milwaukee, Wis.
 *Heltzel St. Form & Ir. Co., Warren, O.
 *Jos. Honhorst Co., Cincinnati, O.
 *Littleford Bros., Cincinnati, O.
 *N. Y. Central Iron Wks. Co., Inc., Hagerstown, Md.

*Union Iron Wks., Inc., Hoboken, N. J.

Bethlehem Steel Co., Bethlehem, Pa.

Biggs Boiler Wks., Akron, O.

Birmingham Tank Co., Birmingham, Ala.

Chatta. Boiler & Tank Co., Chatta, Tenn.

Chicago Bridge & Iron Wks., Chicago.

Graver Corp., E. Chicago, Ind.

Hendrick Mfg. Co., Carbondale, Pa.

McClintic-Marshall Co., Pittsburgh, Pa.

Penna. Bridge Co., Beaver Falls, Pa.

Petroleum Iron Wks. Co., Sharon, Pa.

Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

Ritter-Conley Co., Pittsburgh, Pa.

W. B. Scaife & Sons, Pittsburgh, Pa.

Toledo Crane Co., Toledo, O.

Walsh & Weidner Blr. Co., Chatta, Tenn.

STOKERS, MECHANICAL

Automatic Furnace Co., Dayton, O.
 Babcock & Wilcox Co., N. Y.
 Combustion Engineering Corp., N. Y.
 Detroit Stoker Co., Detroit.
 Sanford Riley Stoker Co., Worcester, Mass.
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

STREET AND ROAD SIGNS (See Signs)

STREET CLEANERS CARTS

Durlach Can & Iron Wks., B'lyn, N. Y.
 Rochester Can Co., Rochester, N. Y.
 Tarrant Mfg. Co., Saratoga Springs, N.Y.

STREET FLUSHERS AND SPRINKLERS

*Austin-Western Ed. Machy. Co., Chicago.
 *Gallon Ir. Wks. & Mfg. Co., Gallon, O.
 *General Motors Trk. Co., Detroit, Mich.
 *Heil Co., Milwaukee, Wis.

*Mack Trucks, Inc., N. Y.

Autocar Co., Ardmore, Pa.

E. D. Etnyre & Co., Oregon, Ill.

Federal Motor Truck Co., Detroit.

Chas. Hyass & Co., N. Y.

Kinney Mfg. Co., Boston

Municipal Supply Co., So. Bend, Ind.

White Co., Cleveland, O.

STREET LAMP POSTS

*Nove Engine Co., Lansing, Mich.

If you find any errors or omissions in this Where to Purchase list, please send corrections to
 CONTRACTORS' & ENGINEERS' MONTHLY

Over



the river

OVER one of the most treacherous rivers in the Eastern United States, the STREET Cableway shown here carries concrete, steel, forms, coal, lumber, men and equipment to the bridge substructure.

A high-speed STREET Cableway is ideal for bridge and dam work, as well as for reservoirs, sewage disposal plants, coal unloading, stadiums, and so forth.

Write and let us send you Bulletin 56, showing the exclusive patented speed features of STREET Cableways.

STREET BROS. MACHINE WORKS
Chattanooga, Tenn.

STREET CABLEWAYS

DERRICKS — HOISTS — DRAGLINES — SKIDDERS, Etc.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

- American Conc. Prod. Co., Chicago.**
Chicago Conc. Post Co., Chicago.
J. B. Clow & Sons, Chicago.
Electric Ry. Equip. Co., Cincinnati, O.
King Mfg. Co., Chicago.
Union Metal Mfg. Co., Canton, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
- STREET SIGNS (See Signs, Street)**
- STREET SWEEPERS**
***Austin-Western Rd. Mch. Co., Chicago.**
***Good Eds. Mach. Co., Kennett Sq., Pa.**
Butler Mfg. Co., Cleveland, O.
Elgin Sales Corp., N. Y.
Foamite-Childs Corp., Utica, N. Y.
Kinney Mfg. Co., Boston
- STREET SWEEPING BROOMS**
***Littleford Bros., Cincinnati, O.**
J. I. Holcomb Mfg. Co., Indianapolis, Ind.
Brush & Broom Mfg. Co., Indianapolis, Ind.
Kendallville Broom & Brush Co., Kendallville, Ind.
Lang Broom Co., Pittsburgh, Pa.
Jos. Lay Co., Ridgeville, Ind.
Milwaukee Brush Mfg. Co., Milwaukee, Osborn Mfg. Co., Cleveland, O.
- STREET BROOMS REFILLED**
Kendallville Broom & Brush Co., Kendallville, Ind.
Lang Broom Co., Pittsburgh, Pa.
Osborn Mfg. Co., Cleveland, O.
- STUMP PULLERS**
***Clyde Ir. Wks. Sales Co., Duluth, Minn.**
***La Plant-Chaste Mfg. Co., Cedar Rapids, Ia.**
Ersted Machy. Mfg. Co., Portland, Ore.
H. L. Bennett & Co., Westerville, O.
Thomas Elevator Co., Chicago.
John Waldron Corp., New Brunswick, N. J.
- SUBGRADING MACHINES**
***Lakewood Eng. Co., Cleveland, O.**
The Hug Co., Highland, Ill.
Shaw-Enochs Tractor Co., Minneapolis
- SUPERHEATERS**
Babcock & Wilcox Co., N. Y.
Power Specialty Co., N. Y.
Superheater Co., N. Y.
- SURVEYORS' INSTRUMENTS (See Instruments)**
- SWITCHBOARDS**
Allis-Chalmers Mfg. Co., Milwaukee.
General Elec. Co., Schenectady, N. Y.
Wagner Elec. Mfg. Co., St. Louis, Mo.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
- TAMPING MACHINES**
***Harnischfeger Corp., Milwaukee, Wis.**
***Ingersoll-Band Co., N. Y.**
Chicago Pneum. Tool Co., New York
- TANKS, AIR COMPRESSOR**
***Connery & Co., Inc., Philadelphia.**
***Curtis Pneum. Mch. Co., St. Louis, Mo.**
***Hell Co., Milwaukee, Wis.**
***Ingersoll-Band Co., N. Y.**
***Littleford Bros., Cincinnati, O.**
Abendroth & Root Mfg. Co., N. Y.
Biggs Boiler Wks., Akron, O.
Birmingham Tank Co., Birmingham, Ala.
Chicago Bridge & Iron Wks., Chicago.
Chicago Pneum. Tool Co., N. Y.
Graver Corp., E. Chicago, Ind.
Independent Pneum. Tool Co., Chicago
Indiana Air Pump Co., Indianapolis.
Lancaster Iron Wks., Lancaster, Pa.
National Tube Co., Pittsburgh, Pa.
Petroleum Iron Wks. Co., Sharon, Pa.
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.
W. B. Scalfie & Sons Co., Pittsburgh, Pa.
Westinghouse Tract. Brake Co., Wilmerding, Pa.
Worthington Pump & Machy. Corp., N. Y.
- TANKS, STEEL**
***Connery & Co., Philadelphia.**
- *Hell Co., Milwaukee, Wis.**
***Jos. Honhorst Co., Cincinnati, O.**
***Littleford Bros., Cincinnati, O.**
***N. Y. Central Iron Wks. Co., Hagers-town, Md.**
Biggs Boiler Wks., Akron, O.
Birmingham Tank Co., Birmingham, Ala.
S. P. Bowser & Co., Inc., Ft. Wayne, Ind.
J. I. Case Threshing Mach. Co., Racine, Wis.
W. E. Caldwell Co., Louisville, Ky.
Chatta. Boiler & Tank Co., Chattanooga, Tenn.
Chicago Bridge & Iron Wks., Chicago.
Columbian St. Tank Co., K. City, Mo.
Dover Boiler Wks., N. Y.
Farrell Mfg. Co., Joliet, Ill.
C. C. Fouts Co., Middletown, O.
Graver Corp., E. Chicago, Ind.
R. Hardesty Mfg. Co., Denver, Col.
Hendrick Mfg. Co., Carbondale, Pa.
Lancaster Iron Wks., Lancaster, Pa.
Pacific Tank & Pipe Co., San Francisco.
Petroleum Iron Wks. Co., Sharon, Pa.
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.
Ritter-Conley Co., Pittsburgh, Pa.
W. B. Scalfie & Sons, Oakmont, Pa.
United Iron Wks., Inc., K. City, Mo.
Walsh & Weldner Boiler Co., Chattanooga, Tenn.
Wayne Tank & Pump Co., Ft. Wayne, Ind.
- TANKS, WOOD**
W. E. Caldwell Co., Louisville, Ky.
G. M. Davis & Son, Palatka, Fla.
Eagle Tank Co., Chicago.
Hausser-Stander Tank Co., Cincinnati, O.
Kalamazoo Tank & Silo Co., Kalamazoo, Mich.
Nat'l Tank & Pipe Co., Portland, Ore.
Pacific Tank & Pipe Co., San Francisco.
Redwood Mfrs. Co., San Francisco.
A. T. Stearns Lumber Co., Boston.
U. S. Wind Eng. & Pump Co., Batavia, Ill.
Wendnagel & Co., Chicago.
- TANK WAGONS**
***Acme Rd. Mach. Co., Frankfort, N. Y.**
***Gallon Ir. Wks. & Mfg. Co., Gallon, O.**
***Hell Co., Milwaukee, Wis.**
***Mack Trucks, Inc., N. Y.**
Butler Mfg. Co., Minneapolis, Minn.
J. I. Case Threshing Mach. Co., Racine, Wis.
- TAPES, STEEL AND METALLIC**
***Lufkin Rule Co., Saginaw, Mich.**
Eugene Dietzgen Co., N. Y.
Keuffel & Esser Co., Hoboken, N. J.
L. S. Starrett Co., Athol, Mass.
- TAR**
***Barrett Co., N. Y.**
Amer. Tar Prod. Co., Pittsburgh, Pa.
- TAR KETTLES (See Kettles)**
- THAWING OUTFITS**
***Aeroli Burner Co., Union Hill, N. J.**
***Hauck Mfg. Co., Bklyn., N. Y.**
- TIE TAMPERS**
Electric Tamper & Equip. Co., Chicago
- TIE BOLTS FOR WALL FORMS**
***Hawley Tie Bolt Co., Minneapolis**
- TIES, STEEL**
***Koppel Ind. Car & Equip. Co., Koppel, Pa.**
Carnegie Steel Co., Pittsburgh, Pa.
Int'l Steel Tie Co., Cleveland, O.
Sweet's Steel Co., Williamsport, Pa.
- TIMBER CLAMPS**
Fyle-Rogers Corp., N. Y.
- TIRES, RUBBER (For Motor Trucks)**
Pirestone Tire & Rubber Co., Akron, O.
Pisk Tire Co., Chicopee Falls, Mass.
Goodrich Rubber Co., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Kelly Springfield Tire Co., N. Y.
U. S. Tire Co., N. Y.
- TOOL HOUSES, PORTABLE STEEL**
***Blaw-Knox Co., Pittsburgh, Pa.**
***Littleford Bros., Cincinnati, O.**
- TORCHES, OIL (HEATING)**
***Chausse Oil Burner Co., Elkhart, Ind.**
***Hauck Mfg. Co., Bklyn., N. Y.**
***Mead-Morrison Mfg. Co., E. Boston.**
***Alex. Millburn Co., Baltimore, Md.**
- TOWERS (See Stacks, Tanks and Towers)**
- TRACKS, INDUSTRIAL AND PORTABLE**
***Easton Car & Constn. Co., Easton, Pa.**
***Lakewood Eng. Co., Cleveland, O.**
***Koppel Ind. Car & Equip. Co., Koppel, Pa.**
Atlas Car & Mfg. Co., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.
Chase Fdry. & Mfg. Co., Columbus, O.
C. W. Hunt Co., Inc., W. N. Brighton, N. Y.
Sweet's Steel Co., Williamsport, Pa.
- TRACTORS**
***Bates Mfg. Co., Joliet, Ill.**
***Caterpillar Tractor Co., San Leandro, Calif.**
***Cleveland Tractor Co., Cleveland, O.**
***Ford Motor Co., Detroit, Mich.**
***Geo. Hais Mfg. Co., New York**
***Huber Mfg. Co., Marion, O.**
***John Lanson Co., New Holstein, Wis.**
***Mack Trucks, Inc., N. Y.**
***Mead-Morrison Mfg. Co., E. Boston.**
***Rogers Bros. Corp., Albion, Pa.**
Advance-Rumely Thresher Co., Laporte, Ind.
Allis-Chalmers Mfg. Co., Milwaukee
Clark Tractor Co., Buchanan, Mich.
Emerson-Brantingham, Rockford, Ill.
Hart-Parr Co., Charles City, Ia.
Int'l Harvester Co., Chicago.
J. T. Tractor Co., Cleveland, O.
Kinnard & Haines, Minneapolis, Minn.
The Minneapolis Line, Minneapolis.
Minneapolis Steel & Mach. Co., Minneapolis
Monarch Tractors Corp., Springfield, Ill.
Shaw-Enochs Tractor Co., Minneapolis
- TRAFFIC LINE MARKERS**
Carrara Paint Co., Cleveland, O.
Continental Prod. Co., Euclid, O.
Line-O-Graph Co., N. Y.
Tenn. Tool Wks., Inc., Knoxville, Tenn.
- TRAFFIC PAINT**
J. E. Baner Co., Los Angeles, Cal.
Carrara Paint Co., Cleveland, O.
Continental Prod. Co., Euclid, O.
Hanline Bros., Baltimore, Md.
Hosler Paint Wks., Ft. Wayne, Ind.
Sewall Paint & Varnish Co., K. City, Mo.
Sherwin-Williams Co., Cleveland, O.
Tropical Paint & Oil Co., Cleveland, O.
Truscon Laboratories, Detroit, Mich.
Wambs Paint & Varnish Works, Rochester, N. Y.
- TRAFFIC SIGNS (See "Signs, Traffic")**
- TRAILERS FOR TRUCKS AND TRACTORS**
***Eagle Wagon Wks., Auburn, N. Y.**
***Easton Car & Const'n Co., Easton, Pa.**
***La Plant-Chaste Mfg. Co., Cedar Rapids, Ia.**
***Highway Trailer Co., Edgerton, Wis.**
***Miami Trailer-Scrapper Co., Troy, O.**
***Rex-Watson Corp., Canastota, N. Y.**
***Rogers Bros. Corp., Albion, Pa.**
Arcadia Trailer Corp., Newark, N. Y.
Detroit Trailer & Mach. Co., Detroit.
Freuhuf Trailer Co., Detroit, Mich.
Hercules Trailer Mfg. Co., Los Angeles
Lee Trailer & Body Co., Chicago.
Squier-Rix Co., Milwaukee, Wis.
Trailmobile Co., Cincinnati
Troy Wagon Wks., Troy, O.
Warner Mfg. Co., Beloit, Wis.
Whitehead & Kales Co., Detroit, Mich.
- TRAILERS, INDUSTRIAL**
***Easton Car & Const'n Co., Easton, Pa.**
***Highway Trailer Co., Edgerton, Wis.**
***Lakewood Eng. Co., Cleveland, O.**

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*

STEAM — GAS — OR ELECTRIC DRIVE



PULL YOUR DITCH—With Keystone Pull-Stroke Ditcher Buckets

PULLING YOUR DITCH WITH KEYSTONE PULL-STROKE DITCHER BUCKETS may cut the tangles out of some of your knottiest excavation problems.

The Keystone Trencher does easily some things that other trenching machines cannot attempt. For example, it can be operated in boulders and blasted rock, and will dig shales, fire clay and such soft formations. The presence of stumps, water, or ice in the trench offers no serious obstacle to its operation.

Keystone patented buckets are made in eleven sizes, from 8 inches to 68 inches wide, so that you can have the exact size you need at small cost.

The Keystone stands safely on the solid ground and cuts any width or depth to 20 feet. Digging cellars, it finishes on top. Neither trucks nor excavator need be taken into the pit at any stage of the operation.

Your copy of the Catalog—full of golden ideas in digging economics—is impatiently awaiting your solicitation.



KEYSTONE DRILLER COMPANY — BEAVER FALLS, PENNA.
179 BROADWAY, NEW YORK MONADNOCK BLOCK, CHICAGO JOPLIN, MO.

KEYSTONE SHOVEL

•D-30

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

*La Plant Cheate Mfg. Co., Cedar Rapids, Ia.
 Chase Fdry. & Mfg. Co., Columbus, O.
 Detroit Trailer & Mach. Co., Detroit.
 Electric Wheel Co., Quincy, Ill.
 Leo Trailer & Body Co., Chicago.
 Trailmobile Co., Cincinnati.
 Whitehead & Kiles, Detroit, Mich.

TRAMWAYS, AERIAL WIRE ROPE (See Aerial Wire Rope Tramways)

TRANSFORMERS

Allis-Chalmers Mfg. Co., Milwaukee.
 Duncan Elec. Mfg. Co., Lafayette, Ind.
 Enterprise Elec. Co., Warren, O.
 General Elec. Co., Schenectady, N. Y.
 Kuhlman Elec. Co., Bay City, Mich.
 Maloney Elec. Co., St. Louis, Mo.
 Packard Elec. Co., Warren, O.
 Pittsburgh Transf. Co., Pittsburgh, Pa.
 Wagner Elec. Corp., St. Louis, Mo.
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TRANSITS AND LEVELS (See Instruments)

TRANSMISSION (Auxiliary for Fords)
 *Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 Hinkley Motor, Inc., Detroit.
 Lincoln Mfg. Co., Connersville, Ind.
 Ruckstell Sales & Mfg. Co., N. Y.
 Warford Corp., N. Y.

TRANSMISSION MACHINERY, POWER
 Allis-Chalmers Mfg. Co., Milwaukee.
 Chain Belt Co., Milwaukee, Wis.
 Dodge Mfg. Corp., Milwaukee, Ind.
 Link-Belt Co., Chicago.
 Webster Mfg. Co., Chicago.
 Weller Mfg. Co., Chicago.

TRASH CANS (See Cans)

TREADS, SAFETY

Amer. Abrasive Metals Co., N. Y.
 Amer. Mason Safety Tread Co., Lowell, Mass.
 Concrete Steel Co., N. Y.
 Norton Co., Worcester, Mass.

FRENCH EXCAVATORS (See Excavators)

FRENCH PUMPS (See Pumps, Contractors')

TURBINES

*Ingersoll-Rand Co., N. Y.
 Allis-Chalmers Mfg. Co., Milwaukee.
 De Laval Steam Turbine Co., Trenton, N. J.
 General Elec. Co., Schenectady, N. Y.
 Terry Steam Turb. Co., Hartford, Ct.
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TURNTABLES FOR MOTOR TRUCKS

*Blaw-Knox Co., Pittsburgh, Pa.
 *Easton Car & Const. Co., Easton, Pa.
 Champion Eng. Co., Kenton, O.
 Freeman Mfg. Co., Racine, Wis.
 Hug Co., Highland, Ill.
 Western Structural Co., Moline, Ill.

VALVES, ACID RESISTING

*Barber Asphalt Co., Philadelphia

VALVES, CHECK

Chapman Valve Mfg. Co., Indian Orchard, Mass.
 Coffin Valve Co., Boston.
 Ludlow Valve Mfg. Co., Troy, N. Y.
 Mich. Valve & Fdry. Co., Detroit.
 Rensselaer Valve Co., Troy, N. Y.

VALVES, GATE AND INDICATOR

Chapman Valve Mfg. Co., Indian Orchard, Mass.
 Coffin Valve Co., Boston.
 Columbian Ir. Wks., Chattanooga, Tenn.
 Crane Company, Chicago.
 Darling Valve & Mfg. Co., Williamsport, Pa.

Eddy Valve Co., Waterford, N. Y.
 Fairbanks Co., N. Y.
 Iowa Valve Co., Oskaloosa, Ia.
 Kennedy Valve Mfg. Co., Elmira, N. Y.
 Ludlow Valve Mfg. Co., Troy, N. Y.
 Rensselaer Valve Co., Troy, N. Y.
 A. P. Smith Mfg. Co., E. Orange, N.J.
 R. D. Wood & Co., Philadelphia.

VALVES, PRESSURE SEATED

Cleveland Pneum. Tool Co., Cleveland, Ohio.

VALVES, TAPPING

Eddy Valve Co., Waterford, N. Y.
 Hays Mfg. Co., Erie, Pa.
 Kennedy Valve Mfg. Co., Elmira, N. Y.
 Ludlow Valve Co., Troy, N. Y.
 Michigan Valve & Fdry. Co., Detroit.
 Rensselaer Valve Co., Troy, N. Y.
 A. P. Smith Mfg. Co., E. Orange, N. J.

VALVE BOXES AND HOUSINGS

*U. S. Cast Iron Pipe & Fdry. Co., Burlington, N. J.
 Central Fdry. Co., N. Y.
 Chapman Valve Mfg. Co., Indian Orchard, Mass.
 H. W. Clark Co., Mattoon, Ill.
 J. B. Clow & Sons, Chicago.
 Columbian Ir. Wks., Chattanooga, Tenn.
 Darling Valve & Mfg. Co., W'msport, Pa.
 Eddy Valve Co., Waterford, N. Y.
 Fairbanks Co., N. Y.
 Iowa Valve Co., Oskaloosa, Ia.
 Kennedy Valve Mfg. Co., Elmira, N. Y.
 Ludlow Valve Mfg. Co., Troy, N. Y.
 H. Mueller Mfg. Co., Decatur, Ill.
 Rensselaer Valve Co., Troy, N. Y.
 A. P. Smith Mfg. Co., E. Orange, N. J.
 R. D. Wood & Co., Philadelphia

WAGONS (See Dump Carts and Wagons)

WAGON BODIES (See Dump Bodies)

WAGON LOADERS (See Loaders, Gravel and Wagon)

WALLBOARD

Beaver Prod. Co., Inc., Buffalo, N. Y.
 Bird & Son, Inc., E. Walpole, Mass.
 Cornell Wood Prod. Co., Chicago.
 Haverhill Box Board Co., Haverhill, Mass.
 MacAndrews & Forbes Co., N. Y.
 Plasterboard Wall Board Co., Buffalo, N.Y.
 U. S. Gypsum Co., Chicago.
 Upson Co., Lockport, N. Y.
 Waldorf Paper Prod. Co., St. Paul, Minn.

WALL TIES

Concrete Steel Co., N. Y.
 Consolidated Exp. Metal Co., Bradock, Pa.
 Berger Mfg. Co., Canton, O.
 Milwaukee Corr. Co., Milwaukee, Wis.
 Niagara Metal Stamp. Corp., Niagara Falls, N. Y.

WATER MAIN CLEANING

Nat'l Water Main Cleaning Co., N. Y.

WATER MAIN TAPPING MACHINES

Hays Mfg. Co., Erie, Pa.
 H. Mueller Mfg. Co., Decatur, Ill.
 A. P. Smith Mfg. Co., E. Orange, N. J.

WATER METERS (See Meters, Water)

WATERPROOFING COMPOUNDS AND MATERIAL

*Barber Asphalt Co., Philadelphia.
 *Barrett Company, N. Y.
 *Phillip Carey Co., Cincinnati, O.
 *Standard Oil Co. (Indiana), Chicago
 *Texas Company, N. Y.
 Atlantic Refining & Asphalt Corp., Phil'a
 General Firep'g Co., Youngstown, O.
 Master Builders' Co., Cleveland, O.
 Minwax Co., N. Y.
 Protexol Corp., N. Y.
 Ruberoid Co., N. Y.
 Sandusky Cement Co., Cleveland, O.
 Sonneborn Sons, Inc., N. Y.

Toch Brothers, N. Y.
 Truscon Laboratories, Detroit, Mich.

WATER PURIFICATION (See also Filters)

*Wallace & Tiernan Co., Inc., Newark, N.J.
 Paradox Eng. Co., La. I. City, N. Y.
 R. U. V. Co., N. Y.

WATER PURIFICATION CHEMICALS

Arnold Hoffman & Co., Inc., N. Y.
 E. I. Du Pont de Nemours & Co., Wilmington, Del.
 Electro Bleaching Gas Co., N. Y.
 General Chemical Co., N. Y.
 Hooker Electrochemical Co., N. Y.
 Mathieson Alkali Works, Inc., N. Y.
 Penna. Salt Mfg. Co., Philadelphia

WATER SOFTENERS

Amer. Water Softener Co., Philadelphia.
 Cochran Corp., Philadelphia.
 Graver Corp., E. Chicago, Ind.
 Int'l Filter Co., Chicago.
 Permutit Co., N. Y.
 W. B. Seafie & Sons, Pittsburgh, Pa.
 Wayne Tank & Pump Co., Ft. Wayne, Ind.

WATER WASTE DETECTION

Empire Elec. & Water Co., Inc., N. Y.
 Pitometer Co., N. Y.
 Simplex Valve & Meter Co., Phil'a.

WATER WHEELS

Allis-Chalmers Mfg. Co., Milwaukee.
 Wm. Crane & Sons Ship & Eng. Bldg. Co., (L. P. Morris Dept.) Phil'a.
 J. Leffel & Co., Springfield, O.
 Newport News Shipbldg. & Dry Dock Co., Newport News, Va.
 Pelton Water Wheel Co., San Francisco.
 S. Morgan Smith Co., York, Pa.
 Worthington Pump & Mchry. Corp., N.Y.

WATER WORKS PUMPS (See Pumps)

WELDING APPARATUS

*Alex. Milburn Co., Baltimore, Md.
 Burke Elec. Co., Erie, Pa.
 General Elec. Co., Schenectady, N. Y.
 Lincoln Elec. Co., Cleveland, O.
 Oxweld Acetylene Co., L. I. City, N. Y.
 Smith's Inventions, Inc., Minneapolis, Minn.
 U. S. Light & Heat Corp., Niagara Falls.
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

WELL SCREENS

A. D. Cook, Inc., Lawrenceburg, Ind.
 E. E. Johnson, Inc., St. Paul, Minn.

WELLS, CONCRETE

Kelly Well Co., Grand Island, Neb.

WELL-DRILLING AND BLAST HOLE MACHINES

*Keystone Driller Co., Beaver Falls, Pa.
 Armstrong Mfg. Co., Waterloo, Ia.
 Loomis Mach. Co., Tiffin, O.
 Sanderson Cyclone Drill Co., Orrville, O.
 Star Drilling Mach. Co., Akron, O.

WHEELBARROWS

*Akron Barrow Co., Cleveland, O.
 *Jackson Mfg. Co., Harrisburg, Pa.
 *Lansing Co., Lansing, Mich.
 *Toledo Wheelbarrow Co., Toledo, O.
 Asheville Wheelbarrow Co., Asheville, N. Carolina.
 Chattanooga Wheelbarrow Co., Chattanooga, Tenn.
 Cleveland Wheelbarrow Co., Cleveland, O.
 Fairbanks Co., N. Y.
 Puffer-Hubbard Mfg. Co., Minneapolis.
 Sidney Steel Scraper Co., Sidney, O.
 Sterling Wheelbarrow Co., Milwaukee.

If you find any errors or omissions in this Where to Purchase List, please send corrections to
 CONTRACTORS' & ENGINEERS' MONTHLY

Tough Bidders = Here's your weapon

On big jobs you bump up against the steam-shovel contractor—he passes up the smaller jobs for you to struggle with, handling a gang of hand-shovelers or teams with scrapers.

The New Lessmann-Contractors' Special—built according to contractors' suggestions—handles both big and small jobs on a steam-shovel basis—80 to 150 yards a day is "easy picking."

Snow removal—

Basement excavation—

Coal and coke handling—

**Quarry work—All such jobs are being
handled most satisfactorily
by Lessmann Equipment.**

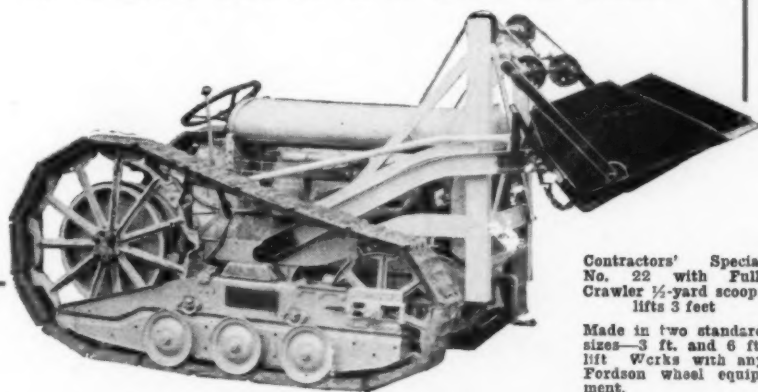
Look for it at the

Ford

POWER EQUIPMENT EXPOSITION

FORD MOTOR BLDG. 54th ST. at B'WAY, NEW YORK CITY

There are over 150 exhibits, in all, of industrial and agricultural equipment for the Fordson Tractor and Ford Truck, to be seen at any time at the Exposition building. Come and look them over, or write us what types of apparatus interest you, and we will send you particulars.



**Contractors' Special
No. 22 with Full-
Crawler 1/2-yard scoop;
lifts 3 feet**

**Made in two standard
sizes—3 ft. and 6 ft.
fit Works with any
Fordson wheel equip-
ment.**

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Ready For That First Cold Spell
with the

AKRON

**Knock-Down
Salamander**



*Here are a dozen
Salamanders,
knocked-down.
100 occupy a space
3½ feet square,
waist high.*



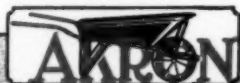
THAT first cold snap is sure to come, sooner or later. Then your stock of knocked-down Akron Salamanders meets your emergency quick. They are put together in a moment, ready for instant use.

—And Akron Salamanders are powerful heating units. Heavy grates with wide, easily cleaned bars, 16 gauge shells with vertical re-inforcing flanges that hold the shape. Channel steel legs. Pans and lids if desired.

Salamander time will soon be here. The Akron knock-down feature makes it easy to stock your needs under a table or in some out-of-the-way corner. Then you are ready when that first cold spell comes along.

Made in Two Standard Sizes. Send for Catalog and Prices.

THE AKRON BARROW COMPANY, 3140 E. 65th St., CLEVELAND, OHIO



Wheel Barrows - Mortar Boxes - Concrete Carts - Scrapers - Coal Chutes

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



Finishes the Job

It never quits till the whistle blows on a finished job.

The Hadfield-Penfield "One Man" Grader Roots or Scarifies the job. Grades it and rolls it to a finished roadway.

Built of heavy sections, manganese and other steel, equipped with H-P Rigid Rail Tracks, this outfit will do more and save more than equipment requiring a much greater expenditure and a big gang. Grades, Roots, Scarifies, Back Fills and Ditches with one man operation.

And don't forget that winter is close at hand and that there is no better snow removal equipment on the market costing as little or doing as much per invested dollar.

Send for both Grading and Snow Removal Circulars.



Scarifying



Rooter Digs in to the Hilt—8 in.

H. P. DuPat Wheel Scrapers
H. P. Rigid Rail Tracks
H. P. Cahl Tracks
H. P. Full Crawlers
H. P. Winchell Rollers

The Hadfield-Penfield Steel Company
Bucyrus, Ohio.



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Where to Purchase

WINCHES

- *Clyde Ir. Wks. Sales Co., Duluth, Minn.
- *Dobbie Fdry. & Mch. Co., Niagara Falls.
- *Ingersoll-Rand Co., New York
- *Mundy Sales Corp., N. Y.
- *Street Bros. Mach. Wks., Chattanooga
- Bethlehem Shipbldg. Corp., Bethlehem, Pa.
- Obisholm-Moore Mfg. Co., Cleveland, O.
- Dake Eng. Co., Grand Haven, Mich.
- Ersted Machy. Mfg. Co., Portland, Ore.
- Lidgerwood Manufacturing Co., N. Y.
- Mead-Morrison Mfg. Co., E. Boston

WINDOW FRAMES AND SASH (Metallic)

- *Truscon Steel Co., Youngstown, O.
- Wm. Bayley Co., Springfield, O.
- Detroit Steel Prod. Co., Detroit.
- E. H. Friedrich Co., Holyoke, Mass.
- David Lupton's Sons Co., Philadelphia
- Penn. Metal Co., Boston.
- Sykes Co., Chicago.

WIRE AND CABLE

- *Williamsport Wire Rope Co., Williamsport, Pa.

American Cable Co., N. Y.

- Amer. Steel & Wire Co., Chicago.
- Copperweld Steel Co., Braddock P. O., Rankin, Pa.
- Fischer & Hayes Rope & St. Co., Chicago
- General Elec. Co., Schenectady, N. Y.
- Habirshaw Elec. Cable Co., Inc., N. Y.
- Harard Mfg. Co., Wilkesbarre, Pa.
- Macwhyrte Co., Kenosha, Wis.
- Nat'l India Rubber Co., Bristol, R. I.
- N. Y. Insulated Wire Co., N. Y.
- Okonite Co., Passaic, N. J.
- J. A. Roebling's Sons Co., Trenton, N.J.
- Safety Ins. Wire & Cable Co., N. Y.
- Simplex Wire & Cable Co., Boston.
- Standard Underground Cable Co., Pittsburgh, Pa.
- Tubular Woven Fabric Co., Pawtucket, R. I.
- Waterbury Co., N. Y.
- Youngstown Sheet & Tube Co., Youngstown, O.

WIRE GLASS

- Mississippi Wire Glass Co., N. Y.

WIRE MESH REINFORCEMENT

- *Truscon Steel Co., Youngstown, O.
- Amer. Stl. & Wire Co., Chicago
- Nat'l Stl. Fabric Co., Pittsburgh, Pa.
- Wickwire Spencer Steel Co., N. Y.

WIRE ROPE (See Rope, Wire)**WOOD BLOCKS (See Paving Blocks)****WOODWORKING MACHINES**

- *Amer. Saw Mill Mach. Co., Hacketts town, N. J.
- *Bansome Conc. Mch. Co., Dunellen, N.J.
- Fairbanks, Morse & Co., Chicago.
- Jones Superior Mach. Co., Chicago.
- Master Woodworker Mfg. Co., Detroit.

WOOD PRESERVATIVES

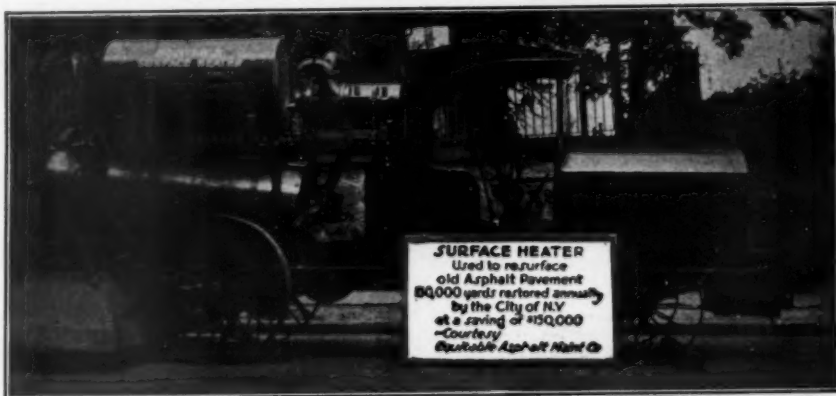
- *Barrett Co., N. Y.
- Protexol Corp., N. Y.

WRENCHES

- Snap-On Wrench Co., Chicago.

* Indicates that the manufacturer carries an advertisement. See index facing inside back cover.*

MAKE BETTER ASPHALT STREET REPAIRS



EQUITABLE SURFACE HEATER

(Improved Lutz Surface Heater)

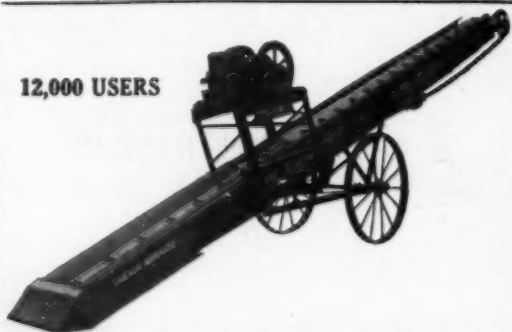
The new improved model is operated with a gasoline engine, designed for power at low speed. The change in this machine from steam to gasoline practically doubles its capacity, simplifies its operation, saves time and labor, permitting a more economical operation of the machine. It eliminates all dirt, water and steam and makes it possible to resurface without flame, from 1,500 to 2,000 sq. yds. of pavement in an eight-hour day. It is easy to start and operate and anyone that can operate an automobile can easily run this machine.

A letter or post card will bring you full and complete information as to terms.

EQUITABLE ASPHALT MAINTENANCE COMPANY

KANSAS CITY, MISSOURI

12,000 USERS



The **AUTOMATIC PORTABLE CONVEYOR**

WITH THE

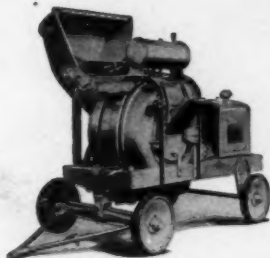
Non-Clogging Receiving End
FOR

Every Conveying Purpose

CHICAGO AUTOMATIC CONVEYOR COMPANY

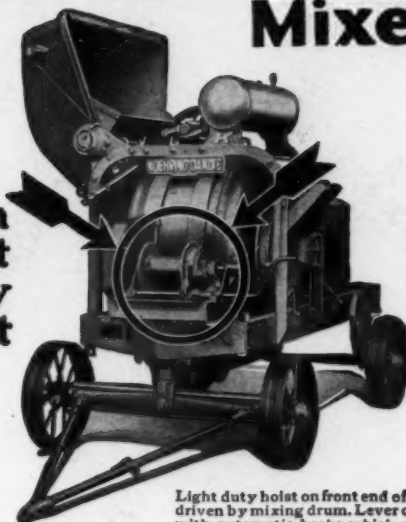
Originators of the Portable Conveyor
998 Old Colony Bldg. **CHICAGO**

KOEHRING 7-S DANDIE Mixer

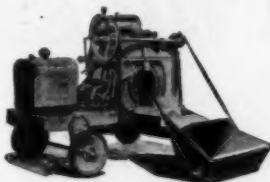


Charging Skip goes to high angle charging position—shoots materials into drum without pounding skip! Note low automatic water measuring tank and Disc Wheels! Liberal drum dimensions!

**With
Light
Duty
Hoist**



Light duty hoist on front end of mixer, driven by mixing drum. Lever control with automatic brake which applies when clutch is thrown out. Capacity 400 feet of $\frac{1}{2}$ -inch cable. Hoisting speed 67 feet to 100 feet per minute.



Engine completely enclosed in dust-tight steel housing, sides of which raise for fullest accessibility to engine! Discharge operated from both sides of mixer.



Low charging platform, steel frame of which is hinged to mixer, and can be folded up against mixer-frame for hauling from job to job! Wide, capacious charging hopper makes charging easy.

No — not the cheapest mixer in the light mixer field, not cheap in any detail or in any part but the remarkable value, the big profit earner among light mixers! And still the price is within the price range for light mixers!

FAST! Fast in charging and fast in discharging—a record maker in getting concrete into the forms where it pays you profit. If you're out of extra profit day by day, don't fail to send back the coupon and know all about the Dandie.

4 cylinder, radiator-cooled engine, or 2 cylinder, hopper-cooled engine!

Worm gear reduction unit mounted on roller bearings, enclosed in dust tight steel housing and running in continuous oil bath. Big bronze-bushed drum roller bearings! Double gear drum drive! Power-charging skip, or low charging platform, automatic water measuring tank. Rubber tires and disc wheels or steel rimmed wheels. A. G. C. Standard!

Send Back the Coupon

KOEHRING COMPANY MILWAUKEE WISCONSIN

PAVERS, MIXERS—GASOLINE SHOVELS, CRANES AND DRAGLINES

Sales Offices and Service Warehouses in all principal cities

Foreign Department—Room 1370, 50 Church St., New York City.

Canada—Koehring Company of Canada, Ltd.,

105 Front Street, East, Toronto, Ontario.

Mexico—F. S. Lapum, Cinco De Mayo 21, Mexico, D. F.

Send Back Coupon for Full Details!

Take our word for it, you will be putting yourself in the way of extra profits and extra value if you learn all about the details of this Dandie Model before you decide on a mixer. No obligations. Send back the coupon today!

A 3261-III

KOEHRING COMPANY, Dept. D-6 MILWAUKEE, WIS.

Without obligation to me of any kind, send me free information about the Koehring Dandie Mixer.

Name.....

Address.....

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



It takes

KEEPING the highways open through the snow season is a man's size job. You need all the help you can get. How can you hope for victory over the storm without adequate equipment? You need snow plows that can be swung into action promptly—that move the maximum number of cubic yards in minimum time—that are so simple in construction that any unskilled worker can easily operate them—that will not get out of order—that will stand up, winter after winter.



Send postal for this convenient manual. Contains authoritative data on every phase of the snow removal problem.

Good Roads

CHAMPION

THE GOOD ROADS

KENNETT SQUARE, PENNA.

PITTSBURGH, PA.....1523 Oliver Building
NEW YORK, N. Y.....50 Church Street
PHILADELPHIA, PA.....2037 Commercial Trust Building

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



Plows like these!

Good Roads Snow Plows have held their leadership ever since they appeared, back in 1913, as the first snow plow ever built for use with motor equipment. They have many exclusive patented features not found in any other snow plows. Truck plows fit any standard make and can be attached in less than ten minutes. Controlled without leaving driver's seat. Correctly engineered to move snow rapidly, with minimum power requirement. All adjustments on top of plow, easily made with cold fingers in thick gloves.

3^{out}
of 4

Good Roads Snow Plows are the plows chosen by seasoned snow fighters. A recent independent survey shows that 3 out of every 4 snow plows in use the country over are "Good Roads."

SNOW PLOWS

MACHINERY CO., Inc.

Snow Plow Headquarters

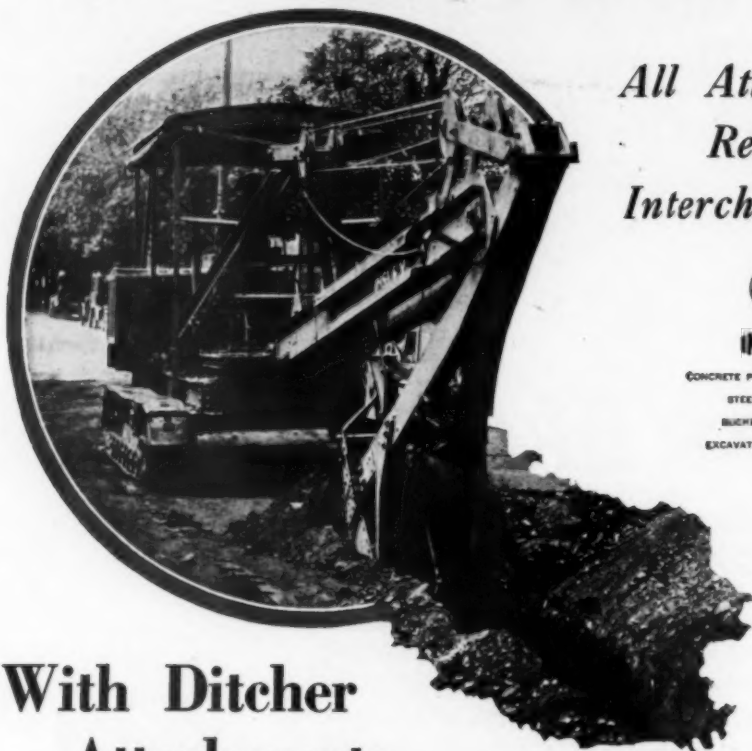
WATERTOWN, MASS.....36 Pleasant Street
PORTLAND, ORE.....3rd and Hawthorne Streets
CHICAGO, ILL.....49th and Halsted Streets



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

THE INSLEY EXCAVATOR

for SHOVEL - DITCHER - CRANE
OR SKIMMER SCOOP WORK



*All Attachments
Readily
Interchangeable*



INSLEY

CONCRETE PLACING EQUIPMENT

STEEL DERRICKS

BUCKETS AND CARS

EXCAVATING EQUIPMENT

With Ditcher Attachments

RUGGED and sturdy, speedy and easy to handle, flexible yet powerful, and economical to operate—these are some of the qualities of the Insley Ditcher which enable it to dig a clean, straight ditch or a basement in any sort of soil, and handle such work profitably for you.

The Ditcher is only one of six interchangeable attachments, each of which is built for a special type of work and all of which together make the Insley Excavator a good all-round machine, which represents the best value in its class.

Write us for Catalog No. 49.

Insley Manufacturing Company . Indianapolis
ENGINEERS & MANUFACTURERS

No. 488

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

EDGAR J. BUTTENHEIM
President

THEODORE R. KENDALL
Editor

HERBERT K. SAGE
Treasurer

MYRON MACLEOD
Advertising Manager

Vol. XIII

No. 4

Contractors' and Engineers' Monthly

October,

1926

Published Monthly at 443 Fourth Ave., New York, by Bittenheim-Dix Publishing Corporation.
Branch Office: Tribune Tower, Chicago, Ill. Tom Dix, Vice-President; Prentice Ford, Western
Advertising Manager; George Conover, Assistant Advertising Manager.

TABLE OF CONTENTS

Construction and Administration

Building the Substructure for the Million-Dollar Pier at Miami Beach, Fla.	45
A Portable Central Mixing Plant.	49
Construction Plant Features of the North Side Sewage Treatment Works, Chicago, Ill. .	50
The Flatbush-Flatlands Relief Sewer in Brooklyn, New York.	57
Pump Supplies Water Over a Mile from Source.	65
Contractors Can Maintain the Attractiveness of Streets During Construction.	66
Rock Excavation for Apartment Building in New York City.	68
Making Use of the Midnight Sun in Winter Construction.	70
Highway Construction on the Buffalo Trail in Minnesota.	72
An Efficient Commercial Concrete-Mixing Plant.	78
Summary of Accidents in Steel Erection.	92

Equipment and Materials

A Line-Up of Patrol Graders and Maintainers.	77
A Boom-Type Backfiller for Fordson Mounting.	84
A New Line of Rollers and Graders.	86
Steel Elevator Towers for Construction Work.	88
A New Two-Ton Truck for the Construction Industry.	90
Measuring Device for Water for 27-E Paver.	90
A New Road Maintainer with Unique Features.	92
A New Five-Ton Tractor.	94
A Grader and Scarifier for Team or Tractor Operation.	94
A New Ladder-Type Trencher.	96
Helpful Material.	98

News, Notes and Helps

Where to Purchase.	3
Why Air Cleaners on Gasoline Engines Soon Pay for Themselves.	76
Stucco Overcoats.	76
Playing Safe.	78
Legal Points for Contractors.	80
New Mundy Distributors.	84
A Concrete Designers' Manual.	86
Talbot Made Manager of Cement Sales.	88
McKiyler-Interstate to Begin Structural Steel Fabrication.	96
Hayman Becomes Los Angeles Full-Crawler Distributor.	96
Helpful Material.	98
Directory of Consulting Engineers and Contractors.	146
Directory of Distributors of Contractors' Equipment.	151
Map of the United States.	152
Index to Advertisers.	181

Telsmith "INSURANCE"

what it really means

Even the mechanical vigilance of the magnetic separator will not always keep out the dreaded tramp iron. The owner of any secondary crusher is always facing its menace. But the owner of a Telsmith Reduction Crusher is **insured** against it.

One usually thinks of insurance as an indemnity against loss—a reimbursement for replacements. And Telsmith "Insurance"—as embodied in the Telsmith Guarantee—**does** cover frame, crown, and main shaft against breakage for two years, even by tramp iron—the broadest, most inclusive warranty any crusher manufacturer ever made. But Telsmith "Insurance" means more than the replacement of broken parts.

With a breakdown **production stops**. There is an additional loss of payroll, overhead and profits far

greater than the cost of repairs. With Telsmith the shut-down is prevented. Rugged brute strength is Telsmith's "long suit." It is extremely short, with a fixed shaft, guaranteed unbreakable, forming a huge bolt through the whole structure. **Both frame and crown are steel**, with massive walls reinforced by heavy ribs. The Telsmith Reduction Crusher stands the gaff where other secondary crushers fail. Telsmith is master of the unexpected—it defies tramp iron.

Bulletin No. 2F21 (Telsmith Reduction Crusher) and Catalog No. 171 (Telsmith Primary Breaker) show fully why Telsmith is practically tramp iron proof. We'll mail them gladly.

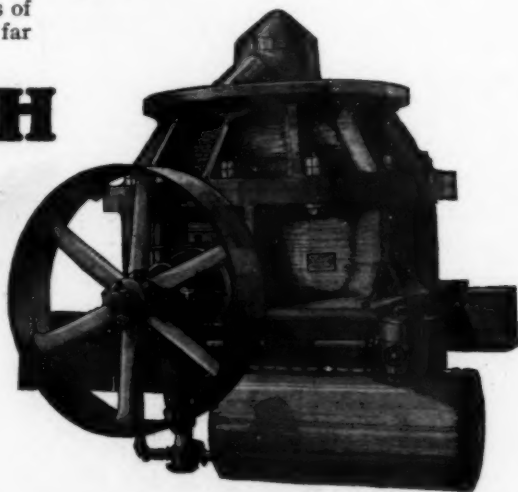
TELSMITH SMITH ENGINEERING WORKS

1820 Holton St., Milwaukee, Wis.

Canadian Representative,
Canadian Ingersoll-Rand Co., Montreal, P. Q.

18 East 41st St., New York City	Old Colony Bldg., Chicago, Ill.
Walde Bros. & Bond Co., Boston, Mass.	Beckwith Mch. Co., Pittsburgh-Cleveland
Selbert-Milburn Co., Columbus, Ohio	Knox Eng. & Eng. Co., Indianapolis, Ind.
Borchert-Ingersoll, Inc., St. Paul, Minn.	Goe. F. Smith Co., St. Louis, Mo.
Bunting Hdw. & Mch. Co., Kansas City, Mo.	

R. C. No. 2



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Vol. XIII

No. 4

Contractors' and Engineers' Monthly

October,

1926

Building the Substructure for the Million-Dollar Pier at Miami Beach, Fla.

By JOHN McCALL

Superintendent of Construction, Frederick Snare Corporation, New York City

THE large amusement pier being built at Miami Beach, Fla., is to be 600 feet long and 50 feet wide for 440 feet outshore. From this point, the deck will be about 100 feet in width. There is nothing unusual about the structure aside from the fact that it is being built in the open sea, well within the West Indian hurricane belt. The concrete substructure was completed about July 20 and on July 26 the first of the series of West Indian hurricanes which have horrified the country took full possession of the South Florida coast. The wind at Miami Beach reached a velocity of about 60 miles per hour, piling up enormous seas. For a period of about 24 hours the pier was attacked from all sides and underneath by the heavy pressure of the water. At no time during this period was it possible to walk out on the pier, as the heavy seas were breaking completely over the deck. As soon as the storm subsided a careful examination revealed that no damage had been done. Not the slightest crack could be found in the entire structure. In several instances sections of broken-up craft and floating timbers that were lashing around among the columns underneath the pier caused a little chafing of three or four of the columns, but nothing worthy of mention. The terrible hurricane of September 18 and 19 caused no more damage than the earlier hurricane, with the exception that a large vessel was thrown against the outer end of the pier, causing some damage to eight bays of the substructure.

Substructure

The reinforced concrete substructure of the pier is of the beam and girder type designed for a live load of 125 pounds per square foot. It is supported on 159 cylindrical-shaped reinforced concrete columns 30 inches in diameter. These columns are spaced 20 feet on

centers in a longitudinal direction for a distance of 440 feet outshore and 16 feet on centers from this point to the end of the pier. The spacing of the columns in the transverse direction is practically 16 feet throughout. The average length of the supporting columns is about 20 feet over the entire area of the pier. The 30-inch shaft of these columns is seated in all cases on a spread footing 4 feet in diameter and 3 feet high, an average of 12 inches of which is imbedded in the solid coral rock of the ocean floor.

Superstructure

A modern two-deck, fireproof, steel building is being erected over the entire area of the pier. The first deck consists of 81 concessions or stores which range in size from 10 x 12½ feet to 16 x 12½ feet, about 40 per cent of the stores being equipped with plumbing facilities. In these concessions competition is reduced to a minimum, because of the fact that they were granted on a selective basis, no two stores having the same line of goods. These stores being in the center of the pier will be flanked on each side by a promenade deck which extends the full length of the pier. On the outer end of the pier this promenade broadens considerably and here fishing privileges will be sold at a minimum charge. In addition to the stores there will be a large sea-food restaurant and cabaret at the outshore end.

Second Deck

The second deck is divided into three units. The first unit, which is on the inshore end of the pier, consists of a large moving picture theater, 240 feet x 50 feet, estimated to seat 1,200 spectators. At the entrance to the theater a large handsome foyer has been designed, the ceiling of which will be 43 feet above the first deck. This theater is modern

in every respect and will compare favorably with any moving picture house in the country.

The second unit consists of a radio broadcasting station 200 x 50 feet, to be equipped with two steel masts 150 feet in height. This unit is divided into three sections, consisting of an equipment room, broadcasting room, and a large auditorium. The radio station is of the most modern design and will be one of the leading stations in the South.

The third unit, which is located on the out-shore end, comprises a ballroom with a floor area of 16,000 square feet, estimated to accommodate 1,100 couples. A feature of the ballroom will be the location of the band-stand in the center of the dance floor.

Sinking the Supporting Columns

Cribbing was erected on the shore to the desired elevation of the completed columns. On this was erected a traveler with a large derrick, three-drum Lambert hoisting engine, swinging engine, and boiler. The derrick was of the stiff-leg type and had a boom 80 feet in length with a lifting capacity of about 10 tons.

A heavy frame guide with steel rails for legs was also built. This was used to set the cylinders in their exact position. The guide was found to be very necessary on account of the heavy seas which would have washed the cylinders from their positions before they could have been driven. This equipment, with the addition of a No. 9 McKiernan-Terry steam-hammer, completed the plant necessary for the driving of the cylinders.

The first operation after placing the guide was to lower a steel cylinder made of $\frac{3}{8}$ -inch boiler plate with the customary butt straps, down inside the guide to the ocean floor. These cylinders were about 20 feet in length. After the cylinder had been plumbed and brought to exact position inside the guide by the use of adjustable timbers provided for that purpose, the steam-hammer with its grillaged driving base was placed on top of the cylinder and driving commenced. In practically all cases the cylinders were driven perfectly plumb, very little trouble being experienced by drifting or sliding of the steel shells on the bottom. The driving of the steel shells was done with great care so as to obtain a minimum penetration of at least ten inches in the coral rock of the ocean floor. After the driving of one shell had been completed the guide was lifted vertically by the derrick boom of the driven cylinder and spotted in the correct position for the next cylinder, this operation being repeated until the four-cylinder bent was completed.

The next operation was the cleaning out of the steel shells preparatory to placing the concrete. Before cleaning was begun eight $1\frac{1}{4}$ x 6-foot steel dowels were driven around the circumference of the cylinder. The dowels were properly located as follows: First, a template was placed on top of the steel cylinder with the necessary holes for spacing the dowels in correct position. A $1\frac{1}{2}$ -inch pipe was inserted in one of the holes and plumbed by men standing on top of the template. As soon as the pipe was brought to a vertical position inside the cylinder, the steel dowel was dropped down inside the pipe and a special steel follower inserted inside the pipe on top of the dowel.

The driving of the dowels was done by a heavy Ingersoll-Rand paving breaker striking on top of the follower. In all cases the dowels were driven to such an elevation as would permit them to project up into the spread footing about three feet. The driving of these dowels had a tendency to break up and spall off any soft rock on the surface of the ocean floor. After the dowels were all in place the cylinder was mucked out clean, all loose rock and sand being removed, after which a diver was sent down to make the final inspection.

The next step was to insert the collapsible cylindrical-shaped steel forms in which the columns were poured. The steel forms were fitted at the bottom with a spread-out steel base four feet in diameter, which, when lowered down inside the steel shell, came in close contact with the wall of the shell itself. These steel forms were supported at the desired elevation on top of the steel cylinder. The elevation being such that the flared-out bottom of the steel form would be at the correct elevation to form a footing four feet in diameter and about three feet thick. After the steel form had been brought to line and grade inside the steel cylinder, the steel reinforcing rods of the columns were lowered inside the form in such a manner that the steel reinforcing would be covered with about three inches of concrete. The vertical reinforcing steel was made up of eight one-inch deformed bars accurately spaced around the circumference of the form. In addition to the vertical steel the customary one-quarter-inch hooping was used, spaced about 12 inches center to center. The vertical reinforcing was of such a length that the upper ends of the steel bars projected into the deck girders about 20 inches.

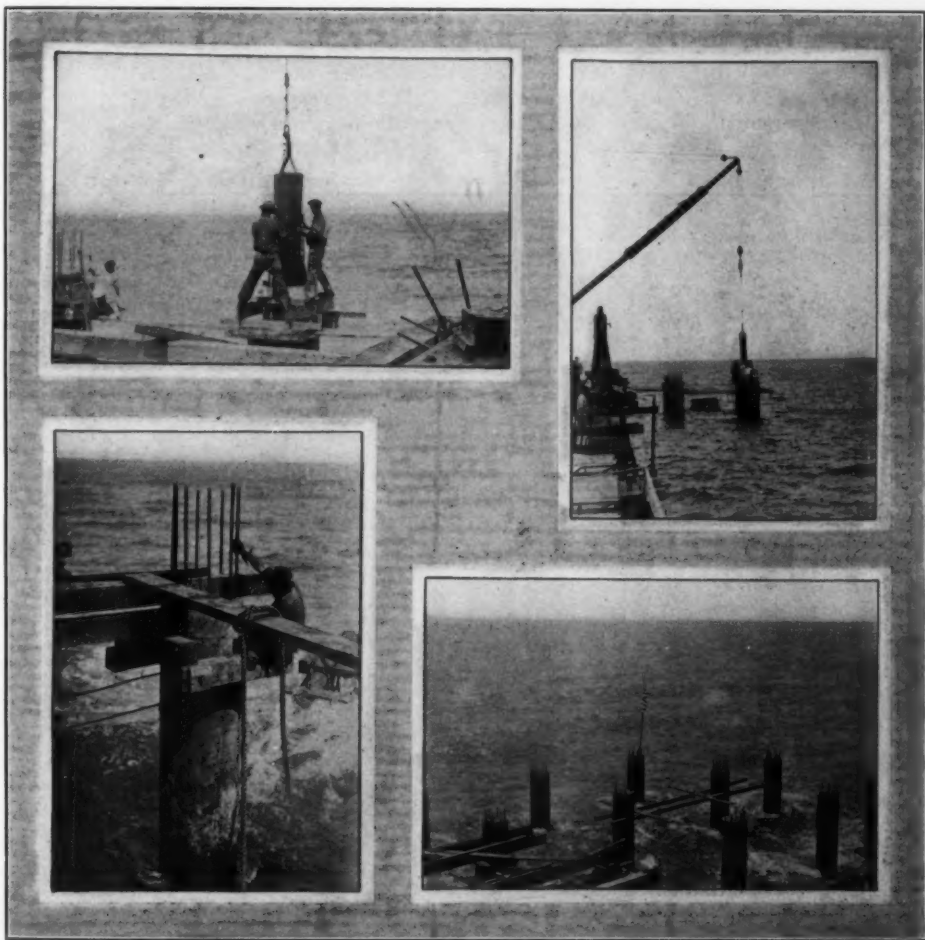
Rapid-Hardening Concrete Used

It was evident at the outset of the work that rapid-hardening concrete would have to be used. Otherwise it would have been impos-

sible for the erection traveler and equipment to proceed forward day by day on the completed columns. Several trials were made with patented hardeners to facilitate quick setting, but after experiment it was decided to use Lummite cement, and this material was used throughout the entire job exclusive of the deck. The pouring of the concrete inside the steel forms under water and all the way up to grade was accomplished in the usual way with a bottom-dump bucket of about one-half-yard capacity. No effort was made to seal the bottoms and pump out the cylinders, as is sometimes done to pour the balance of the cylinders in the dry.

Rapid Progress of Erecting Traveler

As soon as a 4-cylinder bent had been poured and set for 24 hours, stripping was started so as to permit the erecting traveler to move forward on the completed columns for the driving of the next bent of cylinders. The stripping of the steel forms was accomplished by releasing the adjusting and holding cables which were used to secure it in position inside the cylinder. The steel cylinder itself was fitted at its lower end with a short sleeve of the same diameter as the cylinder and all that it was necessary to do to lift the steel cylinder up over the completed concrete columns was to remove the bolts that were used to fasten the sleeve



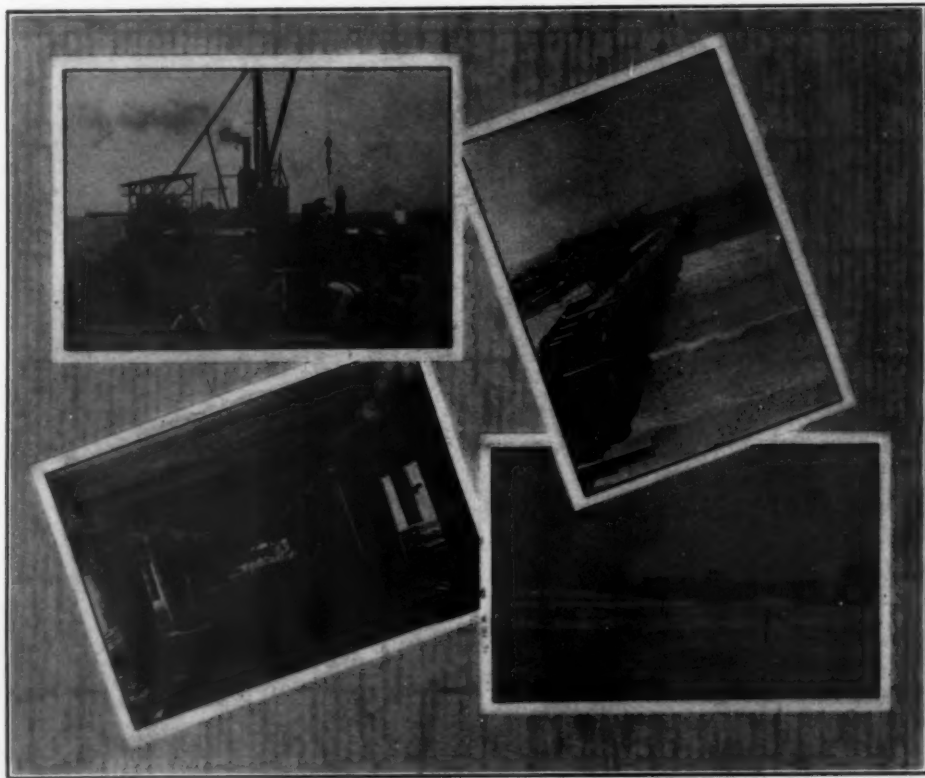
BUILDING THE MILLION-DOLLAR PIER AT MIAMI BEACH, FLA.

Upper left.—Pouring columns with bottom-dump buckets. Upper right.—Distant view, showing derrick handling bottom-dump bucket. Lower left.—A completed column showing stay-laths being placed. Lower right.—Completed columns at outshore end of pier before placing of deck

to the cylinders. These bolts were removed by divers and the steel sleeve was left in position, imbedded in the ocean bottom as extra precaution against wash or scour. After stripping, the customary running timbers were placed in position on top of the concrete columns and the traveler pulled ahead for the next bent. This operation was repeated successfully without accident of any kind over the 24-hour concrete from one end of the pier to the other. The traveling derrick with its machinery was a very heavy rig with large wheel loads. As soon as the erecting traveler had moved forward for several bents, work on the concrete deck was begun. This reinforced beam and girder type deck was poured in the usual way on forms which, of course, could not be supported from below with shoring, as is generally done.

The supporting equipment for the deck forms consisted of transverse timber stay-laths for the full width of the pier. These stay-laths were securely bolted to each concrete

column with 1-inch bolts so as to obtain as much friction as possible. In addition to the transverse stay-laths, a short 8 x 8 toggle was securely bolted to each column in a longitudinal direction directly underneath the stay-lath and in close contact with the underside of it. Of course, the friction obtained with bolted stay-lath and toggles would have supported a considerable load, but it was thought advisable not to depend on friction alone to take all of the thrust, and in order to be on the safe side a 1-inch U-bolt was used over the top of the column. This hairpin U-bolt was of proper size to slip down over the top of the columns in a transverse direction and its threaded lower ends were inserted in holes that had previously been bored in the toggles. This U-bolt was pulled up tight with long-handled wrenches and no slipping occurred in spite of the fact that the dead loads on the 20-foot panels were very great. After the forms and stay-lath had been removed, the U-bolt was cut off right up under the soffit of the beam



A SERIES OF CONSTRUCTION PHOTOGRAPHS OF THE MIAMI BEACH PIER

Upper left.—The traveler at work. Upper right.—The top of the finished deck. Lower left.—Underpart of the deck after completion. Lower right.—Typical heavy seas which occurred throughout the construction period

and the only metal wasted was the short horizontal part that rested on top of the cylinder. The cut off U-bolts were rewelded by the blacksmith on the job and were used over and over again.

Central Mixing Plant

Concrete for the entire structure was mixed in a central mixing plant located inshore and the concrete was transported outshore over the completed work for both columns and deck slab in a specially constructed car designed for the purpose. No trouble was experienced with the quick-setting alumina cement and first-class concrete was obtained.

The aggregate consisted of a clean silicious sand obtained at Bartow, Fla., about 200 miles from the work and the stone used was the hard coral rock which is used all over southern Florida for all classes of concrete work.

Steel Superstructure

The steel superstructure which is being erected on the pier is of the usual type of balloon framing. This steel is being erected by the general contractors with a specially designed A-frame traveling derrick equipped with a 75-foot boom. This derrick started operations at the inshore and is backing outshore as the steel erection progresses. At the proper time a few slight changes will be made in the rig and the operation will be reversed, starting the erection outshore and backing inshore until the building is completed. The erecting derrick was designed as a double-ended rig

with this idea in view. At the inshore end of the pier a stiff-leg derrick was erected for the purpose of handling and sorting the steel in the storage yards. It was necessary to build a wall of tongue-and-groove Wakefield sheeting along the sea side of the derrick to protect it from the seas which kept breaking in most of the time. The ground conditions and the site were such that it was impractical to set the derricks farther inshore where they would have been safe from the ravages of the sea. These derricks, together with the customary air drilling and riveting equipment, make up the steel erection plant.

The writer has had considerable experience on water-front work in different parts of the country, always in protected harbors and rivers, and can vouch for the difficulty and extra cost of building a structure of this nature in the open sea.

The pier is being built by the Miami Pier Corporation, of which G. R. K. Carter is President. The structure was designed by R. A. Preas of Miami and he is represented on the job by Frank Godwin as Engineer. The substructure was built and the steel superstructure is being erected by the Frederick Snare Corporation, with the writer as Superintendent, Frank Dickson as Office Manager, and Charles Kline, Engineer. The structural steel is being furnished by the Ingalls Iron Works, Birmingham, Ala., and all patented joints are being furnished by the Massillon Bar Joist Company, of Canton, Ohio.

A Portable Central Mixing Plant

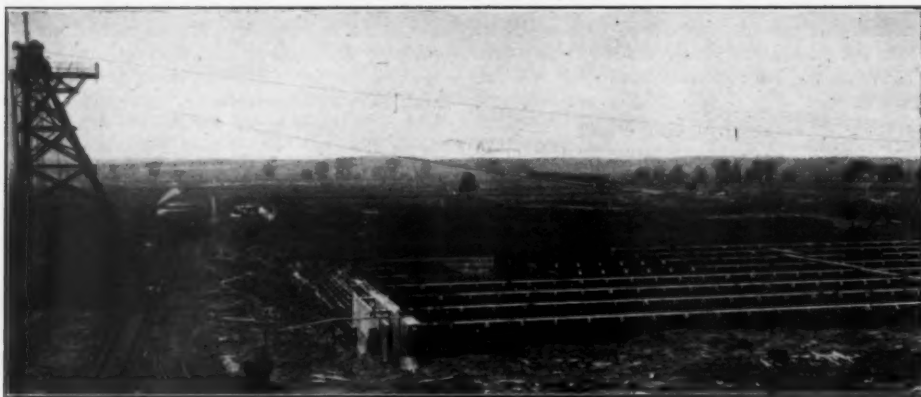
Well-Devised Unit Used on Galveston, Texas, Sea Wall

J. W. ZEMPTER & COMPANY, contractors, Galveston, Texas, recently purchased a Smith 27-E paver equipped with a special tower, elevating bucket and hopper for chuting concrete from different locations from the Alamo Steel and Supply Company, Houston, Texas, local distributors for the T. L. Smith Company. This equipment is here shown pouring the new Galveston sea wall. It combines in one movable machine a complete central mixing plant. The extreme length of the causeway job makes this portability desirable, since the whole outfit can be moved on the paver traction. Excessive haulage of mixed concrete is thus avoided. The paver is a standard Smith 27-E and the boom and

bucket which have been removed can be replaced for road paving work when desired.



SMITH MIXER POURING GALVESTON
SEA WALL



CABLEWAY LAYOUT ON ORIGINAL CONTRACT FOR CONSTRUCTION OF AERATION

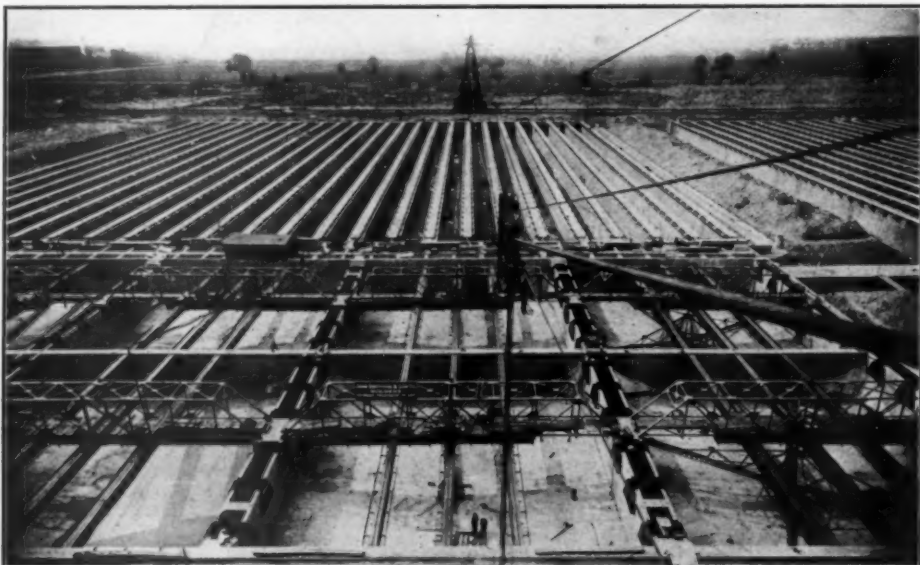
Construction Plant Features of the North Side Sewage Treatment Works, Chicago, Ill.

By LAWRENCE B. BARKER

Senior Assistant Engineer, Sanitary District of Chicago

AN unusual example of the use of two widely different types of concrete-placing equipment on the same project and by the same contractor, each selected to fit the conditions on the job where it is employed, and both supplied with concrete from the same

central mixing plant, is afforded on the construction of the new North Side Sewage Treatment Works of the Sanitary District of Chicago. Here, a contractor's plant, originally planned for the first section of this huge project, has been adapted for use on three other



BATTERY C OF AERATION AND SETTLING TANKS SEEN FROM THE NORTH TOWER ON THE CABLEWAY



SETTLING TANKS, NORTH SIDE SEWAGE TREATMENT WORKS, CHICAGO

sections as contracts for these were obtained.

This treatment plant, the largest activated sludge installation in the world, is being built by the Sanitary District of Chicago to serve practically all the north side of Chicago and the suburban towns of Niles Center, Evanston, Wilmette, Winnetka, and Glencoe, a total tributary population of 800,000 people. The site of the work is a tract of approximately 100 acres, on the west side of the North Shore Channel, lying just outside the northern city limits of Chicago and within the limits of the village of Niles Center.

The construction of the entire treatment works is divided into eight construction contracts besides numerous contracts for equipment. Of the six construction contracts so far

awarded, the John Griffiths and Son Company have been the successful bidders on four. The first of these, awarded in August, 1923, was for the construction of the treatment plant proper, consisting of 36 aeration tanks, each 34 feet 9 inches by 420 feet, 30 settling tanks, each 77 feet square, operating galleries, and adjacent sewage and sludge conduits. It was for this contract that the original construction plant layout was designed.

Material Handling for Aeration and Settling Tanks

In selecting the type of construction plant and its arrangement, the controlling features were: the layout of the various units of the



CENTRAL CONCRETE MIXING PLANT AT THE NORTH SIDE SEWAGE TREATMENT WORKS, CHICAGO, ILLINOIS



SAND AND GRAVEL BINS UNDER THE TRESTLE TRACK WITH BELT CONVEYORS AND BUCKET ELEVATORS TO MIXING PLANT

work to be done; the quantity of concrete and other materials to be placed; and the necessary rate at which construction must be prosecuted. The question of getting materials to the site was easily answered, as a branch line of the Chicago and Northwestern Railroad runs diagonally through the property near its east side. The three batteries of aeration and settling tanks lie in the north half of the site, parallel to its north property line, beginning about 300 feet west of the tracks, covering an area of nearly 20 acres. The major quantities to be placed were: 117,600 cubic yards of concrete; over 6,000 tons of reinforcing steel; 1,300 tons of cast iron pipe; in addition to precast concrete units and miscellaneous equipment. Three years and four months was the specified time for the completion of the contract, but as the remainder of the 1923 season had to be given up to excavation and preliminary work, and as a safe margin for completing the work indicated that the last year would be needed for setting equipment, grading the grounds, road building, and the final clean-up, a tentative program was adopted under which the bulk of the work would be completed in two seasons. This meant the placing of 400 cubic yards of concrete a day and a corresponding schedule for handling steel and cast iron pipe. The placing of this quantity of concrete, while not in itself a formidable undertaking, was complicated by the fact that the individual runs were limited

by the expansion joints, which were so located that nowhere, in footings or walls, except in the operating galleries and the floors of the settling tanks, could a continuous pour of more than 75 cubic yards be made. This meant that the plant adopted must not only be of sufficient capacity for the program outlined, but must be capable of covering the entire area of construction and of being easily and economically moved from one part of the work to another. It should also be able to handle not only concrete but any of the materials to be placed. For these reasons, the use of a central mixing plant and cableway was decided upon.

Central Mixing Plant

The central mixing plant, located on the main material switch near the railroad, consists of two electrically operated Koehring mixers, each of 1 cubic yard capacity, mounted on the first floor of a three-story timber structure, elevated to give clearance below the mixers for a 5-cubic-yard concrete bucket on a flat car. Above the mixers is the charging floor, and the third level is taken up with the sand and gravel bins. Each mixer is charged with sand and gravel from the bins above by a set of Johnson automatic hoppers. Sand and gravel are received in bottom-dump cars, unloaded through an elevated trestle track into receiving hoppers built below the track, which discharge through hand-controlled gates onto belt conveyors. These carry the aggregates to a double bucket conveyor, so arranged that either sand or gravel can be handled into any of the storage bins above the mixers. There are three of these bins—two for gravel, of 160 cubic yards each, and one for sand, of 300 cubic yards, set between the other two.

Bulk cement has been used entirely for the construction of the main work. It is received in paper-lined cars and unloaded by electrically operated plows, hand controlled, into the hopper of a bucket elevator which feeds it into a double storage bin of 3,000-barrel capacity. A screw conveyor under the bins carries the cement to a second bucket elevator, which raises it again to an auxiliary bin above the level of the charging floor. Small steel dump cars, operating on a narrow-gage loop track on the charging floor, carry the cement to the mixers. The amount for each batch is measured by weight into the car as the car passes over a set of platform scales under the discharge gate of the auxiliary cement hopper.

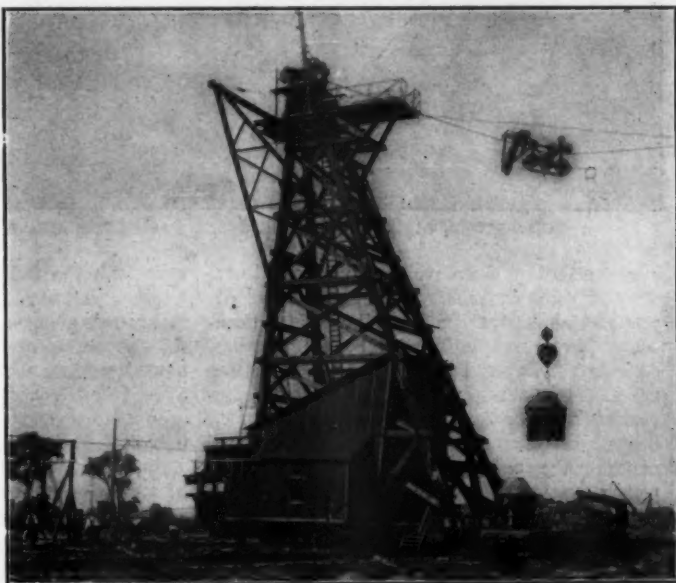
The Cableway

The 15-ton Lidgerwood cableway consists of

two 85-foot timber towers, 38 by 56 feet at the base, traveling on a 5-rail track. For the construction of the aeration and settling tanks, these tracks were laid north and south of the three batteries and parallel to them, giving a span of 805 feet and a tower travel of 1,600 feet. Motive power is furnished by two 85-h.p. electric winches, one on each tower, operating cables attached to deadmen at either end of the tower tracks. The hoisting equipment is a 300-h.p. motor, direct-connected to a double-drum hoist. The main carrying cable is $2\frac{1}{2}$ inches in diameter. All movements of the tower or bucket are controlled by an operator at the south tower, directed by a signalman

battery, the concrete schedule was maintained by keeping only two concrete buckets in service, the empty bucket being hauled to the mixers and returned, full, to the tower while the one previously brought out was being transported by the cableway to the forms, emptied, and returned ready to be set down on the flat car when the loaded one was picked up. To keep up the same production for the second and third battery, it was necessary to install a spring-switch siding along the service track and to use two trains of flat cars and dinky locomotives, and three buckets, the empty train waiting on the siding until the loaded one had passed. When operating without interruption,

OPERATING
TOWER OF CABLE-
WAY, SHOWING
FIVE-CUBIC-YARD
BUCKET OF
CONCRETE ON WAY
TO THE FORMS



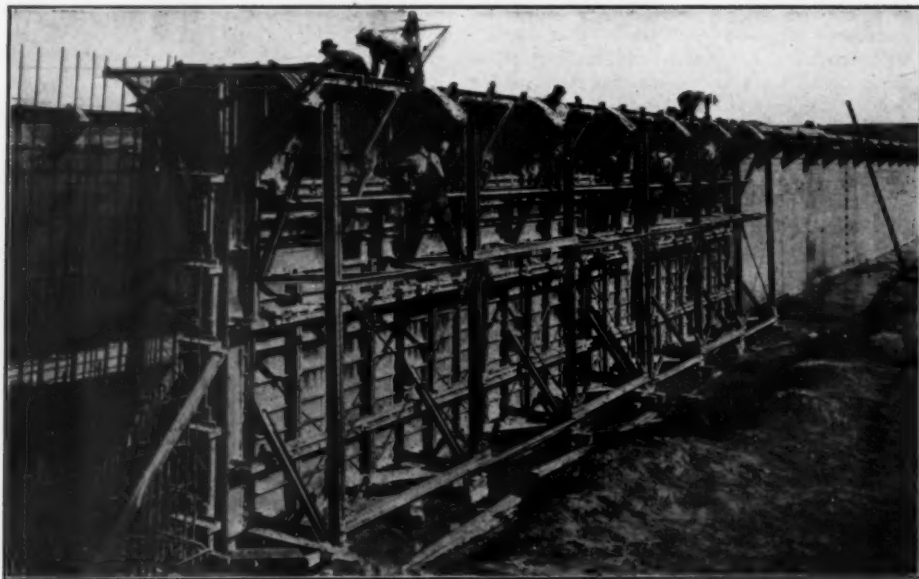
from any point of the work by means of an electric signaling system carried by a light cable between the two towers.

Each tower is served by a standard-gage track connected with the main material tracks, making it possible to receive loaded cars of material or equipment at either tower. All concrete in the case of the original contract was handled over the south service track, a lead from which runs directly under the central mixing plant. For the construction of the aeration and settling tanks, the distance from the mixing plant to the farthest position of the cableway was 1,800 feet, and from the south tower to the north wall of the settling tanks was 700 feet, making a total distance of 2,500 feet over which the concrete had to be transported. During the construction of the nearest

the average run from the mixing plant to the forms could be made in five minutes.

Concreting in the aeration and settling tanks was started June 10, 1924, and continued up to December 10. It was resumed March 25, 1925, and completed, except for finishing the surface of the settling tank floors, on August 15, 1925. During the first season, a total of 65,175 cubic yards of concrete of all classes was poured, and 45,510 cubic yards during the second season. The average daily run for the entire two seasons was 412 cubic yards, but for eight months, when work was continuous, this was raised to 500 cubic yards for eight hours.

Reinforced steel, cast iron pipe, structural steel, and equipment were also handled with this cableway. A notable instance of its use was the setting of the structural steel bridges



THE 62-FOOT, 9-INCH BLAW-KNOX STEEL FORMS FOR AERATION TANK WALLS

over the settling tanks which support the Dorr clarifying mechanisms. These bridges are of 78-foot span and weigh approximately 11 tons. They were assembled and the field riveting done in the material storage yard east of the tanks. Then, when ready to set, each bridge was lifted onto a flat car by a locomotive crane, drawn over the north service track to a point opposite the tank where it was to be set, picked up by the cableway, using a special sling, and set in place on the anchor bolts on top of the tank walls. On one occasion, eight bridges were set in this way in three hours.

Forms

In order to maintain a schedule of 400 cubic yards of concrete daily, the use of forms which could be easily and quickly moved was of vital importance. The long straight walls of the aeration tanks, divided by the expansion joints into lengths of 62 feet 9 inches, seemed particularly suited to the use of steel forms. These were designed and manufactured by the Blaw-Knox Company with the intention of using the cableway to handle them. They were built to conform to the lengths of the walls between expansion joints, two sections of forms making up the unit of 62 feet 9 inches, except the stub walls, 21 feet 9 inches long at the ends, which were poured monolithic with the walls of the influent channel and the operating gallery, and for which special short lengths were used. All

were built the full height of the wall, 17 feet 6 inches, and included forms for the walkways, and concrete supporting-brackets for the baffle slabs at the top of the wall, made up of special hinged sections which could be dropped back, away from the wall, in stripping.

In moving the steel forms with the cableway, half of a 62-foot 9-inch length was handled at a time by means of a sling or yoke consisting of a 6-inch pipe, nearly the length of the forms, stiffened by a wood filler and carrying short lengths of chain with hooks which engaged lifting lugs on the outside of the forms. After hooking onto the forms, and taking a tension on the sling, a slight movement of the cableway away from the wall was enough to loosen the form from the concrete, and it was then lifted and moved into position for the next section of wall.

Wooden forms were used for the aeration tank influent channel walls, the operating-gallery walls, beams and slabs, and the walls of the settling tanks. These were all built-up panels of $\frac{3}{4}$ -inch x 3-inch matched and dressed lumber, using 2-inch x 6-inch studs with rangers built up of two 2-inch x 6-inch stringers, between which the $\frac{3}{4}$ -inch tie bolts were passed. For the settling-tank walls of the last battery to be constructed, the wooden forms were made in panels the full 16-foot height of the wall and 26 feet long, using 6-inch x 8-inch rangers. These panels were handled by the cableway,

using the same rig as for the steel forms. They were found especially advantageous, not only for ease of moving but for greater rigidity and durability. All the wooden forms stood up well under the heavy usage to which they were subjected. The large built-up panels were used as many as eight times and were still serviceable.

In general the use of the steel forms resulted in greatly decreased labor costs as compared with that on the wooden forms. A comparison of actual figures, however, is unfair, as the wooden-form cost covers the work on complicated sections as well as on straight walls.

Material Handling on Contracts K and P

In the fall of 1925, contracts were awarded for the construction of grit chambers and preliminary settling tanks and of the sewage pumping-station and blower house, Divisions K and P, respectively, the John Griffith and Son Company being again the successful bidders. The grit chambers are a group of twelve channels, each 8 feet wide by 80 feet long, together with influent and discharge channels, all to be housed in a one-story brick building, the superstructure of which, about 150 feet square, is included in another contract. There are eight preliminary settling tanks, each 80 feet square, with the necessary influent and effluent conduits and piping. Included in the contract for the preliminary tanks are the furnishing and placing of eight Dorr clarifiers and their supporting bridges, similar to those placed under the original contract but of 3 feet longer span. These structures are located in the space south of the east half of the main batteries.

The pumping-station and blower house, located on the opposite side of the C. & N. W. tracks from the treatment plant proper, will

be housed in a rather ornamental building of brick and steel construction, 187 feet by 307 feet in plan, on a heavy concrete substructure containing the screen chamber, sewage channel and pump-pits at a depth of 45 feet below the ground surface, pump-room and discharge channels.

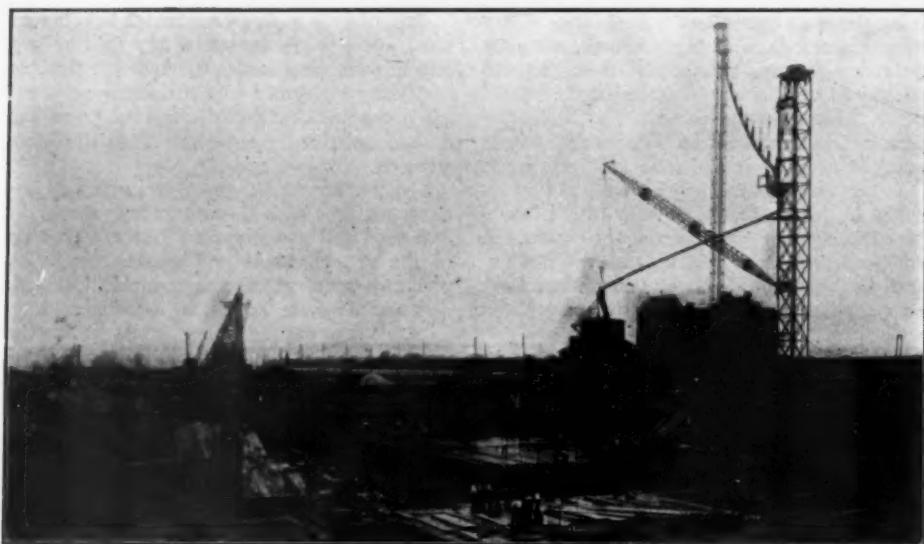
The placing of 14,000 cubic yards of concrete, together with the reinforcing steel, cast iron pipe and equipment for the construction of the grit chambers and preliminary tanks, presented practically the same problem, though on a smaller scale, as that on the original contract. It was decided, therefore, to utilize the same equipment that had been so successful there. To do this, it was necessary to turn the south tower of the original cableway layout to face in the opposite direction and to move the north tower some 1,200 feet, to beyond the south side of the new construction, and to turn it to face north. This resulted in a shortened span of approximately 450 feet. The concrete service-track was relaid to serve what is now the north tower, leading from the central concrete plant as before. As the cableway was still in service placing the backfill around the three main batteries it was not moved until early in the spring of 1926, the remainder of the 1925 season being spent in making the rough excavation for the tanks and preliminary work.

Steel Chuting Tower Used

The use of the cableway was also suggested for the construction of the substructure of the pumping-station, but as this would have necessitated a crossing over the Northwestern tracks, and as the area around the pumping-station structure was limited, the use of the cableway was practically out of the question. Then, too,



DEPOSITING CONCRETE WITH CABLEWAY AND FIVE-CUBIC-YARD BUCKET IN THE PRELIMINARY SETTLING TANKS



SEWAGE PUMPING-STATION SUBSTRUCTURE SHOWING THE LAKEWOOD TOWERS AND CENTRAL CONCRETE MIXING PLANT

the concrete to be placed—19,000 cubic yards—was in relatively large quantities, in a much smaller area, and the work was more centralized. It was determined, therefore, to adopt a system of towers and chutes, taking the concrete from the central mixing plant. To do this, a 210-foot Lakewood steel tower was erected at the back of the mixing plant, chuting to a secondary tower 120 feet high, at the north side of the pumping-station, about 330 feet from the main tower. A counter-balanced chute, suspended from a derrick boom on the secondary tower, reaches any point of the substructure. A movable spout under the receiving hopper at the mixers makes it possible to feed the concrete into the one-yard bucket of the tower system or into the five-cubic-yard bucket supplying the cableway on Division K.

Wooden forms are being used on both the preliminary tanks and the pumping-station substructure. These are similar in design to those described for use on the settling-tank walls of the main battery. As far as possible, they have been made in large panels, and, with the special forms necessary, were built up in the carpenter shops during the winter. The large panel forms for the settling-tank walls are being handled by the cableway.

Because of the more intricate nature of the work on Divisions K and P, concrete progress has been much slower than on the original contract. While it was expected to alternate the concreting between the two jobs, the necessity

of giving greater attention to the work on the pumping-station, especially on the deeper sections, has tended to slow up work on the preliminary tanks. The rate of pouring with the chuting system is, at best, 45 cubic yards per hour, as against an average of 60 cubic yards per hour with the cableway. From April 16 to August 1, 11,220 cubic yards of concrete was placed in the pumping-station substructure.

Main Building Substructure

The John Griffiths and Son Company was awarded the contract for the main building, Division Q, in May, 1925. This is a brick and steel structure, approximately 55 x 300 feet in plan, housing the sludge pumps, main sewage meters, office, laboratories, store rooms, etc. Some 6,300 cubic yards of concrete will be required in the substructure, together with a quantity of reinforcing steel, cast iron pipe, structural steel, and miscellaneous castings.

This structure is to be built south of the batteries and west of the preliminary tanks and use will be made of the cableway.

The design and construction of the North Side Sewage Treatment Works has been carried out as part of the program of sewage treatment by the engineering department of the Sanitary District of Chicago, of which E. J. Kelly is Chief Engineer. The author was resident engineer in charge of construction up to June, 1926, when he was succeeded by B. J. Curtis, Assistant Engineer.

The Flatbush-Flatlands Relief Sewer in Brooklyn

By ARTHUR J. GRIFFIN and JOHN C. RIEDEL

Chief Engineer and Assistant Engineer, respectively, Bureau of Sewers, Borough of Brooklyn, N. Y.

THERE has recently been completed and placed in service in the Borough of Brooklyn, City of New York, the first section of one of the largest sewer improvements undertaken by New York City. The contract price was \$3,250,134 and the successful bidder was the P. J. Carlin Contracting Company, which company, before beginning operations, assigned its contract to the Montrose Contracting Company, of which J. P. Carlin is President.

The improvement lay partly in the former town of Flatlands and partly in the former town of Flatbush and was designed to relieve from frequent flooding in times of heavy rain an area of about 1,300 acres lying in Flatbush, embracing a densely built-up area containing an important residential and business section of the borough. It will also give combined service for an additional 2,100 acres in Flatlands which is developed densely in parts, sparsely in others, and undeveloped in the remaining area. The combined sewers which have been relieved by the new construction were built twenty-five years ago, shortly after

the consolidation in 1898 of the City of Brooklyn and other municipalities with the then City of New York into what is now the Greater City of New York. At that time Flatbush was a suburban town, Flatlands a farming district with scatterings of houses, and the sewers were designed for a development to be expected with the type of transit then in existence and projected. The advent of the Brighton Beach Railroad Improvement and of the Nostrand Avenue Subway Railroad produced changes that were revolutionary in character, as suburban localities and others sparsely developed were brought within easy reach of the business centers. The suburban sections were rapidly overtaken by apartment house developments, streets were covered with impervious pavements, lawns disappeared, and the necessity for relief sewers became manifest. The new sewers have a capacity of three times those relieved and were designed by the "rational method" now in general use throughout the country. The district through which the new sewers were built is generally flat, having but little slope. The elevations of the street



THREE PARALLEL BARRELS OF RELIEF SEWER UNDER CONSTRUCTION, SHOWING INVERTS COMPLETE AND REINFORCING FOR SIDES



NORTH BARREL OF 216-INCH FLATBUSH RELIEF SEWER, SHOWING BLAW-KNOX STEEL FORMS AND METHOD OF MOVING THEM

surfaces range from about 11 feet to about 25 feet above high water. The soil encountered has a top layer of about 3 feet of loam, below which is sand of good quality and which was used in concrete for the sewer. The sewers range in size from a 3-barrel section

equivalent in capacity to 216-inch and 204-inch diameter circles, respectively, a 2-barrel section equivalent respectively to 198-inch and 180-inch diameter circles, to a single barrel of ratings equivalent to 150-inch, 138-inch, and 132-inch diameter circles.



VIEW OF COMPLETED 150-INCH RELIEF SEWER

There were short lengths of connecting sewers 66 inches, 60 inches and 48 inches in diameter. The total length of the sewers built was 15,280 linear feet.

Contract Time Better by Use of Extensive Equipment

The contract provided that work should be carried on simultaneously in five locations so that the entire contract could be completed in the contract time of four hundred working days.

The subgrade of the sewer at its outlet lay at about 10 feet below the normal water table. Water was encountered in the trenches for about 10,000 feet of the length of the work. The 180-inch, 150-inch, 138-inch, and 132-inch

As an adequate supply of labor was difficult to obtain, the use of mechanical appliances was imperative. The contractor used steam shovels, gasoline-driven crawler cranes which operated clamshell buckets and dragline buckets for excavating purposes, air hammers for driving of sheeting, crawler-mounted concrete mixers, motor trucks for transportation of material, gasoline-motor-driven pumps, and an hydraulic machine for the bending of the reinforcement bars.

Construction of Upper Section

Work was begun first in the upper section upon the 180-inch sewer. Steam shovels excavated until it became necessary to place sheeting and bracing. When this had been



METHOD OF REMOVING EXCAVATED MATERIAL FROM CUT

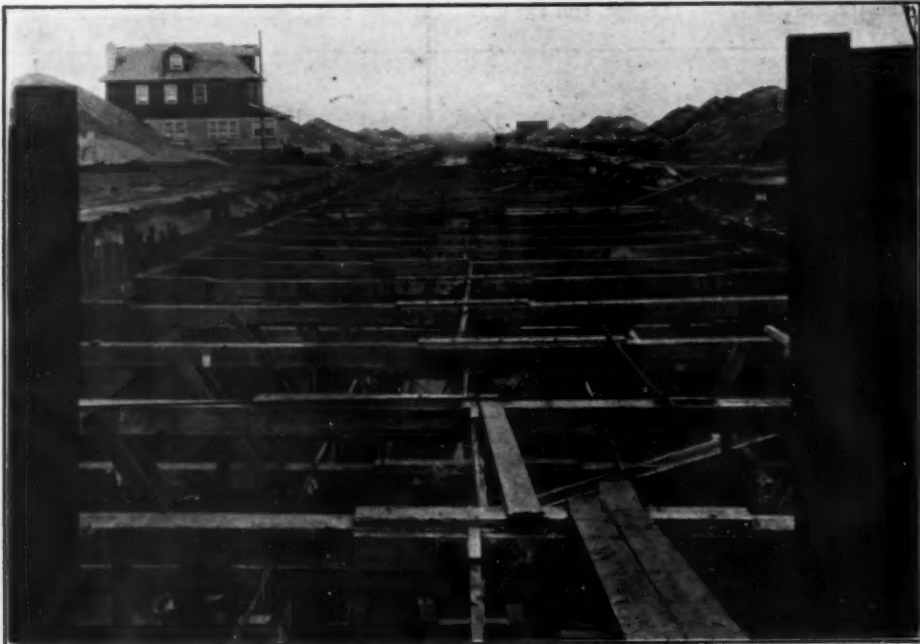
were built in dry trenches. The large volume of water removed, the size of the trenches and the sewers built therein, made the contract a noteworthy one. The contractor divided the work into two distinct operations with separate superintendence. The lower or outlet section lay generally in open country and it was here that the large volume of ground water was encountered, requiring special methods to control it. The upper section where no ground water was encountered lay in a built-up residential section where close sheeting of trenches was necessary to protect adjacent structures from damage.

The contractor performed a noteworthy achievement in completing the work several months ahead of the contract period by the use of extensive mechanical equipment.

accomplished, the crawler cranes fitted with clamshells carried the excavation down to subgrade. The deepest cut was 29 feet and the width of this trench was 32 feet. Two tiers of sheeting were required, the lower tier being of 3-inch plank and the upper of 2-inch. The braces were 8-inch by 8-inch and 10-inch by 10-inch. The lowest brace was just above the inner-bottoms of the sewer and was removed when the invert concrete had been placed and was sufficiently set. A novelty in the form of wrought iron pipe posts under the braces was introduced. Where more than one barrel of sewer was built the posts were placed in the division walls and extended above the level of the sewer roof. When the sewer section was completed they were cut off at the roof top and grouted. The sheeting below the top of

the sewer was used as a back form for the concrete and was left in place. The upper tier of sheeting was left in place where its removal would have caused damage to adjacent pavements, curbs, and other city structures. Otherwise this sheeting was drawn as the trenches were backfilled. The concrete was mixed in crawler machines which were placed alongside the trench. Concrete as it was mixed was chuted to the designated place below. The sand and gravel were stored in nearby streets and were conveyed as needed to the mixers in small auto trucks. The concrete was placed directly on the sand foundation previously levelled off to the required

fill was placed upon the roof, but the trenches were not backfilled for several weeks thereafter. At East 27th Street and Farragut Road the twin sewer divides, one section extending westward to East 21st Street and Foster Avenue where a connection was made with the 25-year-old, 120-inch Foster Avenue sewer, thereby effecting a relief anxiously awaited by the residents whose premises had been periodically flooded for a number of years. The other section extends eastward to Rogers Avenue and Foster Avenue, where a connection was made to an old town sewer of Flatbush. Both the East 21st Street and Rogers Avenue branches will be extended to the north



TYPICAL BRACING OF SHEETING ALONG THE LINE OF THE FLATBUSH RELIEF SEWER

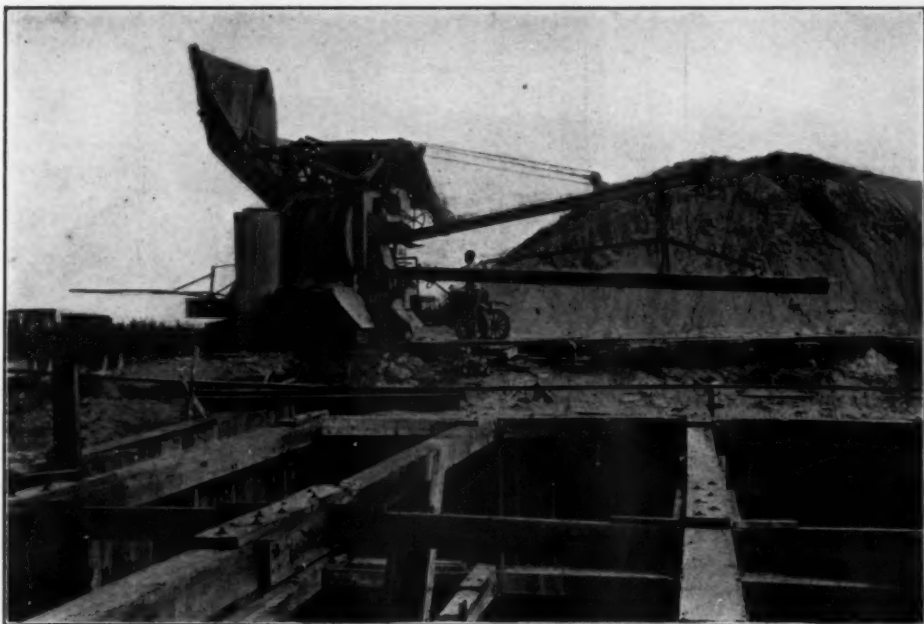
grade. The concrete was placed in the invert in 40-foot sections at the ends of which bulkheads were placed. The reinforcement bars were supported by these bulkheads. Radius form sections in the inverts were used for the placing of concrete. When the invert had set for 24 hours, timber forms for the walls were set and the concrete poured and allowed to set for at least twenty hours before the roof forms were placed. The reinforcement steel was placed as the work progressed, the bars being bent to the required shapes by the hydraulic bender.

The roof concrete was allowed to set for at least three days. A small depth of wet back-

into territories where flooding has frequently occurred and will not be entirely abated until the sewer extensions have been placed in service.

Storm Water Overflow

At East 21st Street and Foster Avenue there was built a chamber so designed and constructed that the domestic sewage from more than 1,300 acres will continue in its old course to the foot of 64th Street in New York Bay, the storm water flow overflowing into the newly built East 21st Street sewer. This connection has already proved its usefulness. Although not entirely completed in early July, it received the storm water from an unusually



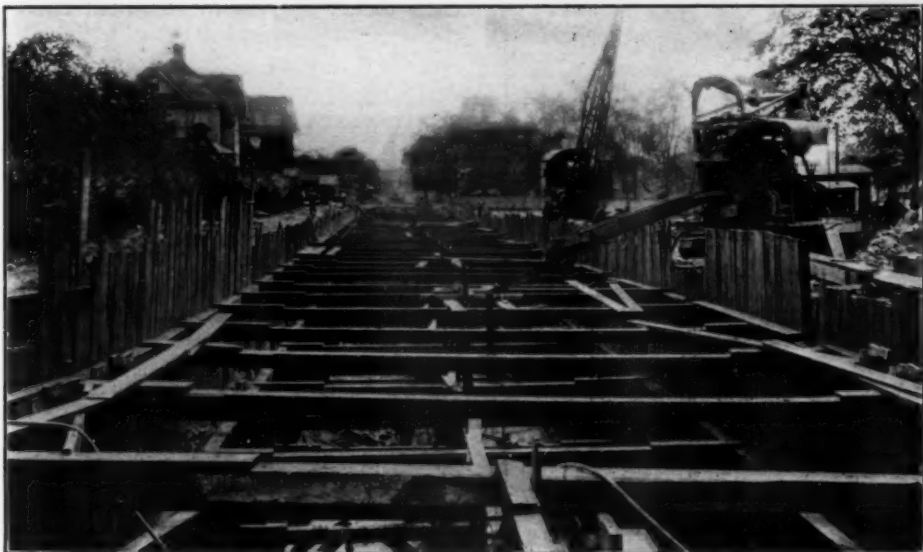
REX PAVER WITH CRAWLER MOUNTING ALONGSIDE SEWER EXCAVATION

excessive storm and prevented another disastrous flooding in Flatbush.

While work was in progress upon the upper section, operations were begun and carried on in the lower or outlet sections in three separate locations.

Construction of Lower Section

Trenches were excavated by means of steam shovels to almost half the depth of the ditch, which reached a maximum of 25 feet. The shovels discharged into motor trucks which entered the trench on ramps located at intervals



RANSOME CONCRETE MIXER POURING WALL BETWEEN TWO BARRELS OF SEWER ON AMESFORD PLACE



INTENSIVE ACTIVITY ALONG LINE OF SEWER SHOWING P & H EXCAVATOR IN FOREGROUND, P & H CRANE AND INGERSOLL-RAND COMPRESSOR AT LEFT

of about 200 feet. When it became necessary to place sheeting, excavations by steam shovel ceased and further excavation down to subgrade was done by crawler cranes on each side of the trench which excavated to a width of 5½ feet or 4 feet wider than the sewer section. This left a space of 2 feet on each side of the sewer which was used to convey the ground water to a sump 12 feet by 12 feet and 20 feet deep, sheeted with timber at the top and with

steel piling at the bottom. Broken stone (to a depth of 3 feet) was placed in the bottom of the sump, the top of the stone strainer being about 5 feet below the subgrade of the sewer. The depth of ground water, about 10 feet, necessitated constant pumping until the entire water table within a half-mile radius had been lowered. The water in the trench was then under control and was so maintained thereafter without interruption. The waterways



SUMP ON THE FLATBUSH RELIEF SEWER WITH ELECTRIC-DRIVEN CENTRIFUGAL PUMP DISCHARGING INTO SEWER AT HIGHER LEVEL

or side channels along the sides of the sewer section were lined with timber driven vertically below subgrade and surrounded by broken stone. At intervals of 30 feet double bulkheads were built transversely across the trench and were filled with broken stone which served to prevent the bottom from boiling or scouring and which directed the flow of ground water through the side channels to the sump. It had been anticipated that sumps would be required every 500 feet along Flatlands Avenue and Avenue I, but the side channels with cross-drains and bulkheads operated so well that they were able to convey the ground water for a distance of nearly 2,000 feet to the sump.

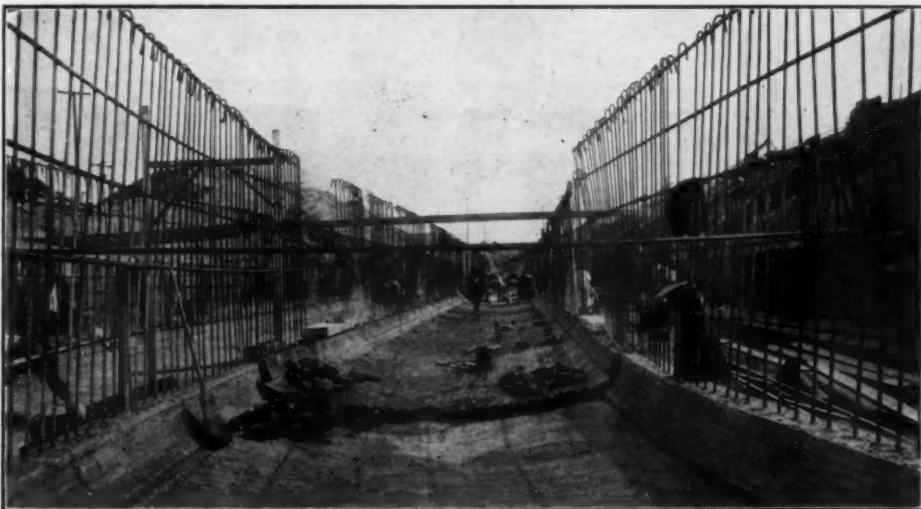
A second starting point of operations was in Schenectady Avenue at the site of a former sand pit previously excavated to ground water.

mixers moved along the streets and avenues and discharged their charges directly into chutes leading to the forms. Some of the forms were of timber and some of steel. These steel ones were three-barrel Blaw-Knox forms. The steel roof and wall forms were mounted on adjustable carriages.

The flow carried by the old Flatlands Avenue sewer was by-passed outside of the main trench to an arm of Paerdegat Basin into which the entire flow of the sewers is temporarily discharged.

Building the 198-Inch Sewer Under a Railroad

The 198-inch two-barrel sewer crossed under the Long Island Railroad at Avenue H near East 40th Street. The traffic upon this rail-

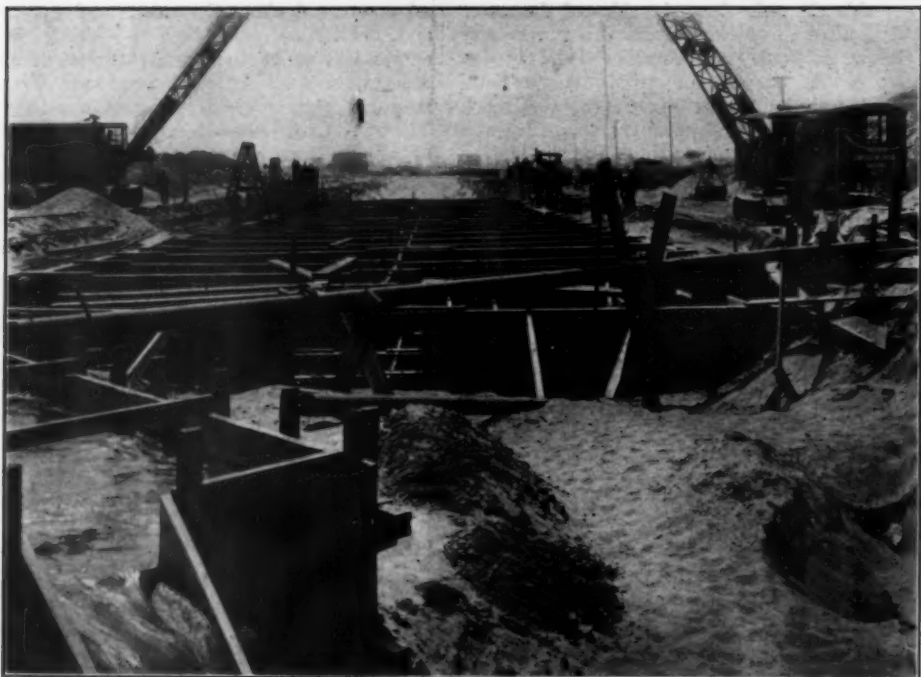


VIEW ALONG CENTRAL BARREL OF INVERT LOOKING SOUTH FROM AVENUE H, SHOWING VITRIFIED BRICK LINING AND REINFORCING FOR WALLS

From this point construction work was carried on down grade, which operation reversed the problem of caring for the ground water. In this operation sumps were established every 60 feet or less and the accumulated water was disposed of by electrically driven portable centrifugal pumps that discharged through steel pipes to an existing 120-inch sewer in Flatlands Avenue, which sewer was replaced by the work performed in this contract in that avenue.

The concrete for this section was mixed by a method similar to that used on the upper sections, namely in crawler types of mixers. There were two of the Oshkosh type, one Koehring paver type, one T. L. Smith paver type, and one Ransome paver type. These

road is perhaps the heaviest freight traffic in the world and special construction was resorted to in order that the railroad company's operations would not be hindered. The city obtained an easement across the right of way of the railroad for the construction of the sewer, and by special agreement the railroad company supported its system of four tracks for account of the contractor, who proceeded with his operations so as to fit in with those of the railroad. The locomotives and freight cars were of the heaviest type in use and available headroom did not permit the construction of any trusses spanning the sewer structure, which had at this location a width of thirty-seven feet and crossed the railroad at an angle of about 46 degrees. The 198-inch consisted



CONSTRUCTION WORK ON AVENUE I LOOKING WEST FROM FLATLANDS AVENUE, SHOWING
TEMPORARY FLUME AT LEFT



CONSTRUCTION UNDER WAY ON CURVE IN FLATBUSH RELIEF SEWER FROM AVENUE H INTO
SCHENECTADY AVENUE

of two barrels each 16 feet wide by 9 feet in height, separated by a partition wall 20 inches thick; the outside walls were also 20 inches in thickness.

Under the agreement the railroad company by its own forces drove bents of bearing piles under each rail, eight piles to a bent, with clusters of two on the outside of the sewer and with two piles within the space allotted for the 16-foot span of each section of sewer. Upon these piles were placed caps which in turn supported 24-inch I-beams for each rail. Squared ties were placed on top of the 24-inch beams and finally the rails were set at the proper elevation. When this work had been done by the railroad company the sewer contractor entered upon the ground, and made the necessary excavation to subgrade.

The piles were driven to a penetration of more than ten feet below subgrade of sewer. The center wall and side walls of the sewer were then constructed with mortices and with steel left protruding so that proper bond could be made with subsequent work. No pile work was needed for the sewer foundation as the

subgrade was firm sand. When the walls had set sufficiently to sustain a load—in about thirty days—the railroad company placed a steel grillage beam on top of the center wall and up to the 24-inch beam heretofore mentioned. The distance between the top of the wall as built and the bottom of the 24-inch beams was 22 inches. The 24-inch beam was wedged to bear on the grillage and then the intermediate piles were removed. Thereafter the sewer contractor completed the inverts of the sewer, placing more than the normal amount of steel reinforcement in order to insure complete union between the inverts and walls. The walls had been specially reinforced to serve as columns to bear the extraordinary loads brought by the locomotives and freight cars. The roofs of the sewer within the right of way of the railroad consisted of 15-inch I-beams encased in concrete having a thickness of 21 inches. When the roofs had set, the 24-inch I-beams were removed and the road reballasted directly on the sewer roof. These operations were performed with no delay to the railroad or to the sewer contractor.

Pump Supplies Water Over a Mile from Source

Hydrant Pressure Proves Inadequate on Road Construction, but Portable Pumper Makes Up the Deficit

THE R. D. Baker Construction Company, Detroit, Mich., has worked out a new method which greatly reduces the cost of carrying a large supply of water for some distance from the source of water to the point of use. This company is one of the large contractors carrying on extensive paving operations on the super-highways leading out of Detroit. On the particular job illustrated, water was needed a mile away from the storage source, which was a hydrant. It was found that the hydrant pressure was so low that the water would not flow up into a tank or barrel. The contractors mounted a Jaeger-Goulds pump on their Fordson tractor. With this they were able to do away with the expensive operation of hauling water in tank wagons for use a mile away. This was done by laying a mile of pipe, then connecting up the Jaeger-Goulds pump installed on the tractor with the hydrant and pipe line. They have also found that this outfit works equally well when they have to take water out of a stream or ditch,

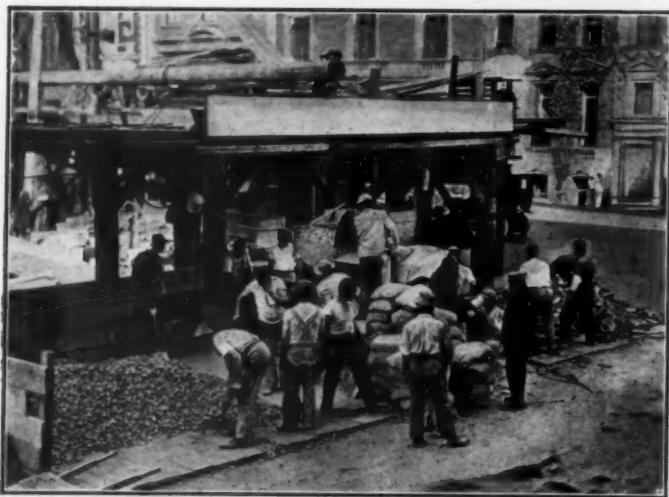


BOOSTING THE LOW HYDRANT ON A ROAD JOB

because of the high pressure developed by the pump. They found also that this new method of transporting water for a considerable distance costs only a fraction of the cost of hauling water.

The right kind of sand is cheap. The wrong kind is the costliest thing on earth.

Contractors Can Maintain the Attractiveness of Streets During Construction



This is the way all contractors formerly handled building construction on important thoroughfares.

Fortunately most builders have given up such methods and now use screens of one type or another, as shown below and on the following page, to mask the operations somewhat from the public eye

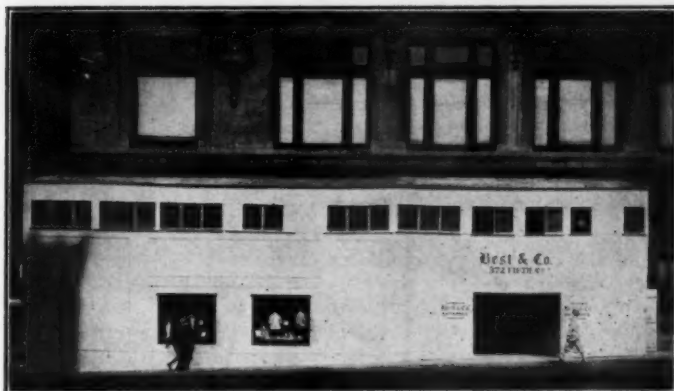
The advantages of attractive screens for construction operations are obvious, as they reflect credit and increase public respect for the builders, owners and tenants, and, in fact, every one connected with such a job. Practices of this sort do a great deal to improve and maintain the character of business and residential streets and consequently to enhance the investments which are represented by new buildings



W. RICHARD DAVIS & COMPANY
USED THIS METHOD OF PRESERVING
THE APPEARANCE OF FIFTH AVENUE,
NEW YORK

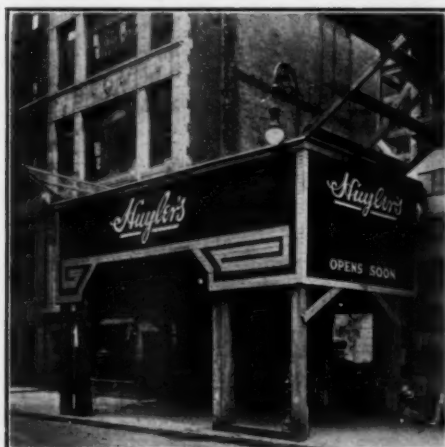


AT LEFT, MASKING A STORE ALTERATION FOR
CANADIAN NATIONAL RAILWAYS



A RECENT
SHOW-WINDOW
ALTERATION BY
BEST & CO.,
NEW YORK

BELOW, BUILDING THE NEW HOME OF
JAMES McCUTCHEON & CO.



THIS PLATFORM PROTECTS THE SAFETY OF THE
PEDESTRIANS AND PRESERVES THE ATTRAC-
TIVENESS OF THE SITE DURING CONSTRUCTION

AT RIGHT, ANOTHER
EXAMPLE OF REAL
CIVIC THOUGHT
Neatly masked
construction and
alterations deserve public
gratitude.

Photographs courtesy
of Fifth Avenue Asso-
ciation, New York



Rock Excavation for Apartment Building in New York City

By DANIEL J. HAUER

Construction Economist, New York City

A LARGE construction or building job is impressive to watch or to describe and it has a certain value to watchers and readers, but few contractors or engineers are engaged on the largest jobs in the country, while thousands are continually carrying on to completion various kinds of undertakings that are of average type and size. It is for this reason that a description is given of an excavation, for an apartment house located on West 70th Street, near Broadway, New York.

In order to make room for this new structure, five dwellings were demolished, leaving a lot with about 110-foot frontage and about 100-foot depth. This foundation excavation, now nearing completion, has been exceedingly well managed, which, in the writer's opinion, is not always the case. Three buildings on the west end of the lot were first demolished. The dwellings were four stories high with the basement a little below the street level and a sub-basement or cellar. These three houses were torn down and the building material hauled away, even the sub-basement walls being pretty well cleared away to the foundation footing. Then a heavy plank runway or incline was laid on heavy cribbing and supports of old timber on the west end of the lot. At this stage of the work a Thew steam shovel was brought to the job and taken down the runway to the sub-basement. At almost the same time work on demolishing the other two buildings was started. Demolition was pushed while preparations were being made to start the steam shovel excavation.

On Manhattan Island, New York City, excavation south of Fourteenth Street, running to a depth of about 115 feet at the lower end of the island, is through soft materials, clay, sand, and gravel, while north of Fourteenth Street the rock, a mica schist, comes close to the surface and in many places before buildings were constructed this rock outcropped or stood above the ground surface in huge boulders or ledges. The surface of this mica schist is very irregular and on top are frequently found large pockets of clay and other glacial deposits. Thus, unless soundings have previously been made, it is difficult to tell how much earth excavation can be made on a job of this character with a power shovel. When the amount of work of this type is small and

uncertain many contractors make excuses for not using machines for their work, electing to employ hand methods, claiming that it is cheaper to do so. Based upon a large number of records and comparisons, the writer believes this is a fallacy and that even for small quantities of work machines are not only quicker but cheaper. One factor of cost that must be reckoned is the overhead saved by doing the work faster; but, unfortunately, as few contractors or builders figure their overhead until a job is finished, this important cost is seldom considered.

On this job, the contractor, an able and experienced excavator, showed excellent judgment in handling the work as he did and in putting his shovel on the job. He was able, by using this machine, not only to clean up the old foundations of the three buildings already wrecked and to excavate the earth down to bed rock, but, also, after the other two buildings had been torn down to the top of the sub-basement or about the street level, to use the power shovel to demolish the rest of the walls, loading directly into 5-ton Mack trucks which were used for hauling the debris and excavated material. This made additional work for the steam shovel, justifying its use, and it certainly saved money over tearing down the walls and taking up the heavy foundation stones and stone steps by hand.

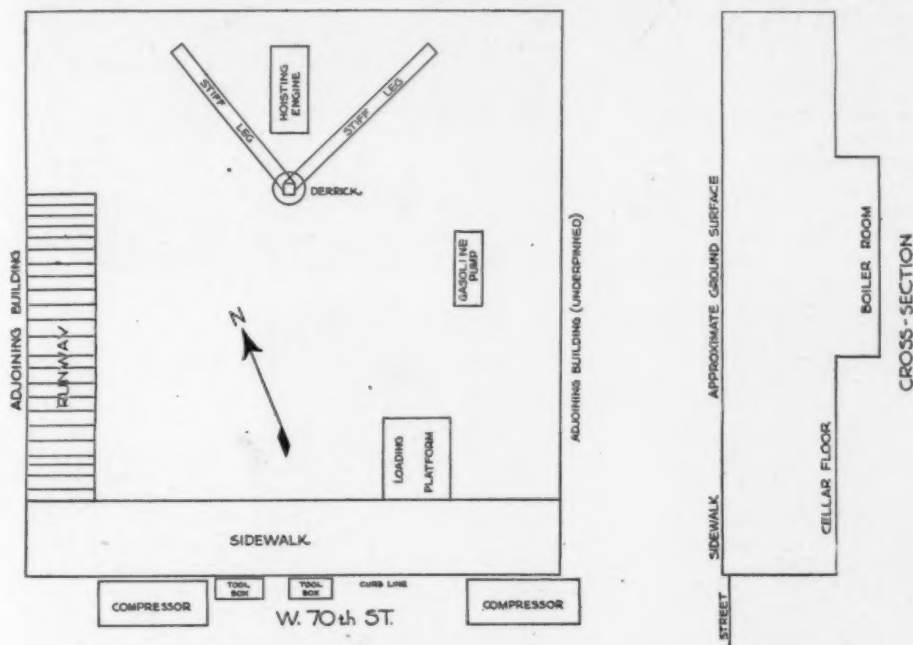
There can be only one objection put forth to this method, namely, the wasting of some of the old building material. The writer does not know whether or not this old material was saved in this case, but under most conditions old brick and building stone could be salvaged at the place where the trucks are dumped at much less cost than on the building site. Thus the shovel is given additional labor-saving work, lasting from one to two weeks, to justify its installation.

Several days before the shovel finished its work, an electrically operated air-compressor was brought to the job and placed in the street alongside the curb and a temporary connection was made with the Edison Electric Company's power line. This portable air plant is to be commended as a modern, economical piece of contractor's equipment. The plant consists of an Ingersoll-Rand 14 x 12 air-compressor, with a 90-foot air tank operated by a Belyea

type-S. K. 230-volt, 100-horsepower electric motor, with a Cutler-Hammer switch and control, and is mounted on solid rubber-tired wheels and has a neat and rather ornamental house built over it. The entire outfit is so built that it can be moved easily by a truck from one job to another. It is compact, well-designed and protected from the weather. If it is necessary to work the plant at night, electric lights are at hand to be used. The air is supplied from the plant by a 2-inch line. After the drilling and rock blasting was well under way, an auxiliary air plant of the same general type but not mounted in the same manner was moved to the job.

feet in depth. A wooden tool-box was furnished for the exclusive use of the drill runners, while a similar tool-box was used for the other tools. A small chest was provided for the hoisting engineer, while a chest was also furnished for the air-compressor. Two small metal chests painted red were provided for storing dynamite.

As soon as the shovel finished its work it went up the runway and left the job and by that time the derrick had been set up, and with two steel skips no time was lost in starting the rock excavation. As the rock work was carried on, the adjoining buildings had to be underpinned. Underpinning is done extensively in New York



Before the Thew shovel had finished its work an American stiff-leg derrick was brought to the site of the new apartment and set up on the back or northern part of the lot. This derrick had two stiff legs set upon timbers running from the 35-foot mast to platforms upon which heavy rocks from the excavation were piled. A 10-foot bull-wheel for swinging the 65-foot boom completed the derrick, which was operated by a Lidgerwood two-drum and derrick-swing hoisting engine. The power equipment was a General Electric 125-horsepower, 230-volt motor, with G. E. control and switch.

The drilling was done by Ingersoll-Rand jackhammer drills driving holes up to about 10

City, as many buildings must be taken care of in building the new subways and in excavating for new buildings. As in the present case, new foundations are frequently taken deeper than old ones so that the adjoining buildings must be cared for by underpinning. Some water was encountered and this was pumped out by a Humphries gasoline pump connected with a LeRoi gas engine.

The holes drilled from 7 to 10 feet in depth were shot in series with Du Pont dynamite and were covered over with large wire mats to keep the rock from being thrown out by the blast. This precaution is required by a city ordinance. These features were similar to those

of other jobs continually handled in the city and need little comment. The excavation was carried to a depth of about 18 feet below the street level and in one place where the boiler-room is to be located the rock was taken out to an additional depth of 8 or 9 feet.

After the greater part of the rock was excavated the runway was taken up so that the rock under it could be taken out. Near the southeast corner of the lot when the excavation was already finished an elevated platform on the street level was built for the trucks to be backed up onto and then loaded by the derrick with the skip.

Good management was shown in the number of skips—fifteen in all—used on the work. Enough men were employed to load from ten to twelve of these skips at one time. This meant employing a large fleet of trucks. The quicker a job of this character can be done the lower the overhead charges, which amount to a considerable daily sum, and thus a greater profit can be assured.

The large number of skips (three skips made a truckload) meant that trucks were loaded promptly. As a rule there were at least two skips ready to be dumped so that trucks came to the job and left with great regularity as rapidly as three skips could be handled. This

is a great consideration in reducing unit costs of excavation. Trucks, especially hired trucks, are worth from \$3.50 to \$5.00 per hour, so that every minute that trucks must wait to be loaded means money wasted. On this job, this item of waste was small except at the start in the morning when the entire fleet of trucks came to the job at the starting hour. With a number of skips emptied the last thing the afternoon before, it is an hour or more before all the trucks are loaded and become spaced out and are returning from the dumps with some degree of regularity. This morning delay is difficult to eliminate with hired vehicles, as it is usually not possible to hire trucks except for a full day and there are no other odd jobs, as a rule, that they can be put to work upon until they are needed to handle the excavated material. This is one subject for close study for every contractor handling this class of work, and it is only by such careful study and records that lost truck-time can be eliminated. This job was far from ideal in this respect, but was such an improvement over many other jobs the writer has seen of late that it found decided approval.

The contractor for the work described was the George J. Atwell Company, Inc., 347 Madison Avenue, New York.

Making Use of the Midnight Sun in Winter Construction

By R. C. DUNCAN

Carbic Manufacturing Company, Duluth, Minn.

AT this season of the year, particularly as the days grow shorter and with the coming of the first tinges of frost and crispy air, contractors everywhere give thought to the speeding up of their work for the purpose of avoiding the inclement weather that usually comes between now and the winter freeze-up.

One way in which operators are beating Jack Frost is by adding a few extra working hours to each day by the use of portable acetylene flare lights. These lights, being strictly portable units, can be moved from place to place as the job progresses and because of their flexibility the light from them can be thrown in any direction or adjusted to any angle, either vertical or horizontal.

The use of a powerful portable light of this kind has been the means of removing a great deal of the old antipathy that many contractors had for night operating. For, with a dependable unit the same speed and safety that attends day operation is obtainable.

For some classes of work, night operating is really more desirable than day work. For example, the laying of pavements can be better accomplished after dark by the use of a concentrated light than it can be in the daytime, as every small depression casts its shadow and is detected more easily than in the daytime. Every one who has driven an automobile knows how much more clearly the unevenness in the road is depicted at night by the use of artificial light than in the daytime.

Another thing in favor of adding a few extra hours of operation after the sun goes down is the extra use that is obtained from the equipment. This should be considered as very important, for every long-headed operator knows that expensive equipment while lying idle simply "eats its head off" in depreciation. He also knows that the more hours his equipment can be used the less the overhead on it and likewise the more profit there accrues from its ownership.

The number of lights to be used depends largely on the size of the job and the number of men employed. One contractor may use two lights, one stationed at each end of the work to avoid cross shadows, while another may use as many as seven at each mixer. In the latter case one is set to direct its light where it will be of most benefit to the man engaged in making the batch transfer, one is set to illuminate mixer operation, one for the special

of the night shift includes a hot lunch about 10 P.M., but the men usually eat this in relays so as not to stop work.

It is a known fact that many workmen will produce better results on the night shift than during the day. There is nothing to distract their attention from their work and the men working in the cool and refreshing night put the best they have into production. There is no doubt that night work is present-day



THREE ACETYLENE
LIGHTS MAKE POSSIBLE
THE HANDLING OF
ROUGH GRADING
ON RUSH JOBS
AT NIGHT

THE FLOODLIGHT
MAKES POSSIBLE THE
CONTINUANCE OF
HEAVY DRAGLINE
WORK FAR INTO
THE NIGHT



use of the men working with the finishing machine, and the others are distributed along the sides of the roadway wherever they are needed.

In arranging the labor schedules for night operation, it is common to arrange two eight-hour shifts for the mixer crews, 7 A.M. to 4 P.M. and 6 P.M. to 2 A.M. The schedule

economy and efficiency. Furthermore, there is no doubt that acetylene lights, because of their simplicity, efficiency, portability, and economy, are the most up-to-date means of supplying the lighting needed. Road building at night requires good light; and unless good light is obtained, construction work is bound to fail.

Highway Construction on the Buffalo Trail in Minnesota

By F. H. A. NYE

A LARGE portion of the state of Minnesota consists of extensive prairies of a much higher elevation than that portion of the state lying along the Mississippi River which is the eastern borderline of the state. To enter the state from this river valley the traveler must pass up a long ravine or river valley to a higher elevation. The highways as first built followed the easiest grades and in very many cases were much longer than would have been necessary if the early builders had not considered cuts and fills too expensive.

State Highway No. 9, which leads westward from La Crosse, Wis., and which is called

No. 9, is not usually a stream of much size, but as it drains a large area and in case of extensive storms sometimes rises and overflows its banks, a bridge has been built which spans what is most of the time a practically dry bed or very small stream.

One of the interesting undertakings on this project was the construction of a bridge beside a creek at a considerable distance from all highways, necessitating very difficult transportation of materials. This bridge has solid concrete piers and very substantial steel girders which were difficult to transport. For some of the distance they were moved or skidded



A LARGE BRIDGE FOR A SMALL STREAM MADE NECESSARY BY FLOOD FLOWS AT CERTAIN TIMES OF THE YEAR

the Buffalo Trail, extends through Hokah, Houston, Albert Lea, Austin, and Worthington, Minn., and Pierre and Rapid City, S. D., becoming Highway No. 34 at that point and leading into the Black Hills and National Forest. The State Highway Department is making extensive improvements between Hokah and Houston, leaving the old highway and taking a new and shorter route for most of the distance, thereby saving about three miles. This new route involves the construction of eleven concrete bridges at a total cost of \$92,994.84. The bridges range from a 30-foot I-beam type to a 75-foot span, low-truss type bridge. There are forty-six standard monolithic concrete culverts, ranging from 2 x 2 feet to 10 x 6 feet, being built at a total cost of \$31,276.40.

Root River, which is followed by Highway

over such obstacles as were in the way. The bridge is built just a little out of the bed of the creek, which will be turned later to give a straighter line of flow.

The rough nature of the ground is shown in the construction of many of the culverts. Some of the culverts are built on such a steep grade that it was necessary to haul the gravel and cement to some point at a considerable distance above the spot where the culvert was to be built and then slide or chute the sacks of cement, aggregate, and the steel reinforcement down to the work. The tops or upper openings of some of these culverts are as much as 20 feet higher than the lower openings and in some places the grade will be several feet higher than the upper opening because of fill. Some of the culverts were built at a cost of as



THE ERIE SHOVEL LOADING A MACK TRUCK ONLY A FEW HOURS AFTER THE SHOVEL HAD BEEN ALMOST OVERCOME BY A LANDSLIDE

much as \$16.80 per cubic yard of concrete.

The surface has now been broken and grading begun on a large portion of the route, but

there are still some portions where the stumps and trees are yet to be removed.

The contract calls for the excavation of 460,-



CULVERTS IN HILLY COUNTRY BUILT PRIOR TO FINAL GRADING AND FILL



BRIDGE ABUTMENT AND SUPERSTRUCTURE COMPLETELY ASSEMBLED ALONGSIDE CREEK BEFORE COURSE OF STREAM WAS CHANGED TO IMPROVE FLOW

ooo cubic yards of material, about 80,000 yards of which is solid rock. The grading contract was let to Frederick Barnard Sons Company, Minneapolis, Minn., for \$192,340.15. The work was begun early in the construction season of 1925 and continued up to January 15, 1926, when it was discontinued until early in April. Portions of the work have been sublet to various contractors, the most extensive portion being handled by Baumgartner and McNamamy, Minneapolis, whose outfit consists of a 2½-yard Bucyrus steam shovel, two small steam industrial locomotives, and twenty or more

cars, with about a mile of narrow-gage track. The shovel is of the railway type, requiring the construction of a standard track from the nearest railroad to the job.

Some portions of the work call for excavating dirt in high banks. The soil was of such a character that there were frequent slides, many times nearly submerging the steam shovel. When this did occur, the shovels dug themselves out quickly. One of the illustrations shows an Erie steam shovel which met with such an experience just completing the job of digging itself out and loading one of the fleet



A NORTHWEST SHOVEL MAKING QUICK WORK OF A HEAVY CUT



NOONTIME FOR THE MULES

of Mack trucks which handled all of the hauling on this section.

During the winter, some portions of the work proceeded more favorably than in hot weather—first, because the men and horses could work more comfortably, and, second, because the gasoline and steam shovels could readily take up a foot or even 18 inches of frozen dirt and break it up into pieces which could be easily loaded into the dump-wagons.

The cost of excavation at the east end of the project near Hokah, where the cut extended 15 to 20 feet, averaged about 40 cents a cubic

yard, while at points of the line where limestone was handled, the cost of excavation was \$3.00 per cubic yard.

Construction Camp and Field Kitchen

Each contractor maintains a camp where the men and animals are cared for with comfortable sleeping tents, kitchens, and dining places. During July, the Barnard outfit was operating a shovel and 13 dump-cars about two miles from the camp. In order to expedite work the noon meal was brought from headquarters to a cool grove just back from the line of the



THE MEN HALT IN THE SHADE FOR THEIR NOON MEAL

highway. Here, after the mules and horses were watered and fed, the cook set up a sumptuous meal on a large table, the men passing with their plates and taking such food as they wished and going out into the shade to eat in comfort.

Conclusion

The improved highway is 13 miles in length, has a width of 32 feet, and will be covered with clay using 60 cubic yards of clay per 100 feet

of roadway. This coat of clay is necessary for the support of the gravel road-bed which will be laid under another contract.

The work is under the supervision of C. D. Konzett, Resident Engineer, who, with his fourteen assistants, has an office at Mound Prairie, a small village near the center of the project. Mr. Konzett has the ability to secure the cooperation of contractors in getting first-class results and at the same time to make himself of service to the contractors.

Why Air-Cleaners on Gasoline Engines Soon Pay for Themselves

By G. S. HAMILTON

Climax Engineering Company, Clinton, Iowa

IF the gasoline engine on your tractor, crane or other equipment is operating under dusty conditions, some provision should be made for cleaning the air that enters the engine through the carburetor. Air-cleaners will pay for themselves by reducing the up-keep cost of the engine. They will keep down repair bills, thus saving you real dollars and cents.

As you know, the carburetor mixes gasoline and air in correct proportions. This mixture is induced into the cylinder heads, where it is exploded. If the air which is brought into the cylinders is dusty, these foreign particles work their way around the pistons and piston rings, acting as an abrasive. Wear results.

Dirt also works down into the oil sump, where

it mixes with the lubricating oil. Sludge forms in the oil pan. This thick, heavy mass of oil and dirt collects around the oil-strainer, clogging it and retarding the flow of oil through the lubricating system. Sometimes it so decreases the flow of oil that the bearings are not properly lubricated, with the result that they burn out.

It will be seen that dust has a disastrous effect on the engine as a whole. Not one part, but all, are affected; repair bills become evident; and the engine becomes an expense rather than an investment.

There are a number of good air-cleaners on the market. If you do not know their names, the manufacturer of the gasoline engine you are using will gladly make recommendations.

Stucco Overcoats

Use of This Material Rapidly Growing as a Means of Improving Houses Already Built

THOSE who have made a careful study of the value of stucco as an outside covering for residences have put forth eight special reasons why wooden frame houses should be classed in stucco overcoats:

1. Overcoating eliminates the need of a protection for wood, as stucco is man-made stone with a permanent color and texture.

2. A stucco overcoat eliminates repairing. Since stucco is man-made stone, it is durable and will last practically indefinitely without requiring attention.

3. A stucco overcoat is warmer in winter because, being cast into place, it is a continuous monolithic covering of dense, non-porous stone. Window-frames and door-frames remain air-tight and water-tight because they are actually cemented in place.

4. A stucco overcoat is cooler in summer because

stucco has great insulating value. Being dense, it throws off rather than absorbs heat and light rays.

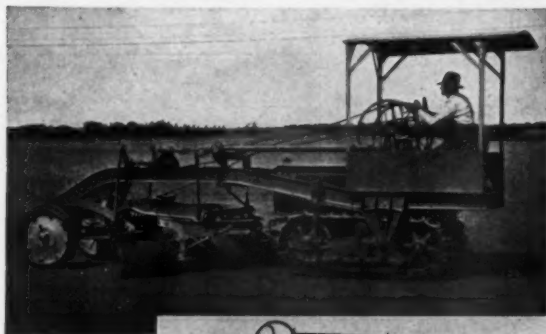
5. Overcoating lowers the cost of heating because each pound of coal or gallon of oil or cubic foot of gas gets full credit for the heat it generates. The heat "stays in" in an overcoated house.

6. A stucco overcoat is fireproof because stucco walls are actually a continuous one-piece surface-covering of stone cast into place.

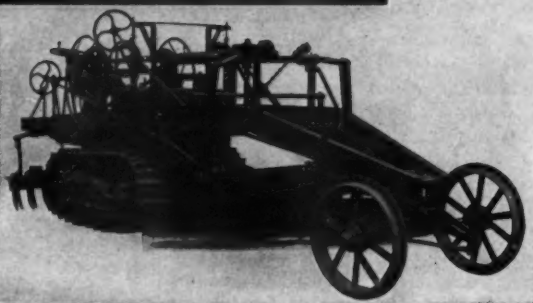
7. The beautiful, warm, mellow appearance alone of stucco will enhance the value of the house from 50 to 100 per cent. This is aside from the direct influence upon property value covered by the prior six reasons.

8. A stucco overcoat gives personal satisfaction—satisfaction in the property as a whole and in the home in particular. This is probably the foremost reason for the use of the overcoat.

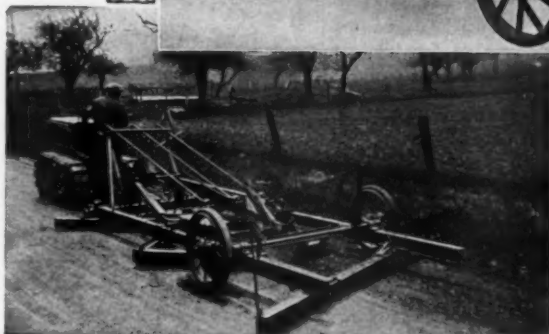
A Line-Up of Patrol Graders and Maintainers



1



2



3



4

FOUR PATROL GRADERS OF THE ONE-MAN TYPE USING 2-TON CATERPILLAR TRACTORS FOR MOTIVE POWER

1.—The Russell Motor Patrol No. 4 made by the Russell Grader Mfg. Co., Minneapolis, Minn. 2.—The Spearwell Big 8 Grader made by the Spears-Wells Machinery Co., Inc., Oakland, Calif. 3.—The Adams One-Man Road Maintainer made by J. D. Adams & Co., Indianapolis, Ind. 4.—The Baker One-Man Automatic Road Maintainer made by the Baker Mfg. Co., Springfield, Ill.

An Efficient Commercial Concrete-Mixing Plant

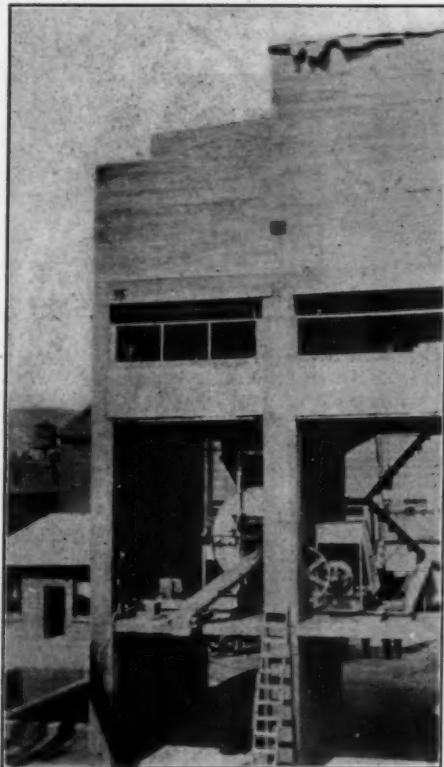
Pittsburgh Plant Has Capacity of 1,000 Cubic Yards of Concrete and 100 Tons of Mortar per Working Day

THE Ready Mixed Concrete Company, South 22nd Street and P. & L. E. R. R., Pittsburgh, Pa., started operations May 1, 1925, with a mixer having a capacity of 1 cubic yard. The demand for the product of the company by the first of 1926 compelled the erection of a new plant, and on June 1, 1926, they placed in operation a new unit having three times the capacity of the original plant.

The new plant is equipped with a special 84-S Ransome building-type concrete mixer which is said to be the largest concrete mixer in use in the United States, mixing a 3-yard batch of concrete. The idea in using such a large mixer is to cut down the waiting time of trucks, which are now loaded in one-third the time that it took from the old-style 1-yard plant. This new 3-yard mixer discharges in less time than the old 1-yard tilting type mixer. The plant also uses Blaw-Knox weighing batchers to insure accurate batches.

The Ready Mixed Concrete Company uses a fleet of 5-ton trucks hauling 3 yards of concrete. A special-built truck is used for hauling the concrete, discharging the concrete through the bottom of the truck.

This organization is today probably the largest ready mixed concrete plant in the world, and in addition it is manufacturing a new product, Ready Mixed lime mortar, which has proved popular. Ready Mixed concrete is approved for use by the city of Pittsburgh and the county of Allegheny Departments of Public Works and by the Bureau of Building Inspection of the city of Pittsburgh. Many of the largest construction organizations in Pittsburgh are constant users of the products of the Ready Mixed Concrete Company, among them the Jones and Laughlin Steel Corporation, the Boyle-Robertson Construction Company, the J. Toner Barr Company, and the Vang



VIEW OF THE WORLD'S LARGEST COMMERCIAL CONCRETE MANUFACTURING PLANT

Construction Company, contractors for the Liberty Bridge.

The Ransome 84-S standard building-type concrete mixer was sold to the Ready Mixed Concrete Company by the Ruane Machinery Company, Pittsburgh, Pa.

Playing Safe

SUPPLEMENTARY or stand-by equipment is being looked upon with more and more favor as a moderate premium paid for business insurance. It need not go to the length to which it was carried by one business man, who insisted on having an entire duplicate plant, completely equipped, ready at hand in case of fire or other disastrous occurrence. But equipment "just a little more complete than seems necessary"—to paraphrase

an old business slogan—is found to be well worthwhile.

In the handling of rough and heavy materials, even the sturdiest of devices ages rapidly, and an extra digging unit, or whatever it may be, gives the foresighted producer a safe and comfortable feeling which he can get in no other way.

Then there is additional and supplementary work which such equipment can often do, just to pay for itself as it goes along. —*Sauerman News.*



HERCULES on the job ENGINES

Hercules Engines are not only
so rugged as they look
—and so sturdy as the name implies
—but always they deliver all the
operator expects—and more!



HERCULES MOTORS CORPORATION, CANTON, OHIO, U. S. A.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Legal Points for Contractors

These brief abstracts of court decisions in the contracting fields may aid you in avoiding legal difficulties. Local ordinances or state laws may alter the conditions in your community. If in doubt, consult your own lawyer

Edited by A. L. H. Street, Attorney-at-Law

Contractor's Liability for Injury to Employee

Dealing with a contractor's liability for injury to an employee, not covered by a workmen's compensation act, the Mississippi Supreme Court decided in the case of *Veney vs. Samuels*, 107 Southern Reporter, 517, that to create liability of employer for injury received by employee while unloading gravel truck, because of defective dumping apparatus, it was not necessary that the employer should have anticipated the particular injury that resulted, but only that an injury of some character might result therefrom.

Negligent Operation of Trucks on Highways

One operating a truck on a public highway in the night-time without headlights on it, as required by statute, and thereby causing injury to another traveler on the highway who was in the exercise of reasonable care for his own safety, is liable for consequential damages, according to the decision of the Appellate Court of Indiana in the case of *Fisher vs. Maxwell Gravel Company* (151 North Eastern Reporter, 618).

Responsibility for Independent Contractor's Negligence

A bridge company, having constructed a reservoir for a city, arranged with one Guthrie to remove scaffolding, he to have the material for his work. Guthrie furnished all the necessary labor. One of his employees was injured and sought to hold the bridge company liable. Holding that the company was not liable, the Kentucky Court of Appeals said in the case of *Marsh vs. Nashville Bridge Company*, (279 South Western Reporter, 1099):

"Clearly Guthrie was an independent contractor and the bridge company would not be liable for the manner in which he removed the scaffold, unless it owed a non-delegable duty to adopt precautionary measures for such removal. If the scaffold was erected at a place where its removal was necessarily attendant with danger to third persons in the vicinity, it would have been the duty of the bridge company to adopt measures for their safety, and this duty would be non-delegable. But the rule does not apply here. The various parts of the scaffold were open and visible, though its removal was necessarily attendant with some hazard. In voluntarily accepting employment on this work, appellee [plaintiff] assumed the attendant risks consequent upon its proper removal by his employer, and the bridge company is not liable for the manner in which the removal was effected."

Responsibility of Highway Contractors to Motorists

While driving an automobile about 20 miles an hour, plaintiff turned abruptly to the right on a detour and went into a ditch. He sued the county and a contractor engaged in constructing a highway, claiming that a barrier should have been maintained at the point where the accident occurred. He recovered judgment in the trial court, but the Wisconsin Supreme Court set it aside and ordered dismissal of the suit for reasons stated as follows (*Buckley vs. Washington County*, 207 Northwestern Reporter, 558):

"It is held that the defendants were guilty of no want of ordinary care in failing to maintain a barrier at the side of the road at the point in question. No law required them to maintain such a barrier. . . . In any event, a traveler proceeding at the rate of 20 miles an hour, making a sudden abrupt turn to the right on a road which he knows is under construction, must be held to be guilty of contributory negligence as a matter of law. . . ."

"Contractors and the public authorities are not insurers of the safety of travelers, and the plaintiff, under the circumstances disclosed by the facts of this case, was bound to exercise care for his own safety. This is not a case where the traveler slid into the ditch or was thrown from the highway by an obstacle, but one where he deliberately and intentionally departed from the traveled track for no other reason than that he was following a wheel track, or rut, as he described it."

Rights of Copartners

Important rules of law applying to the rights of members of a partnership were laid down by the West Virginia Supreme Court of Appeals in the case of *Lutz vs. Miller*, 133 South Eastern Reporter, 633, as follows:

When a partner retires from a firm, it is his duty to see that notice of such retirement is given to those who have been dealing with the firm. If no such notice be given, the retiring partner is generally treated at law as still a member of the firm and is liable as such.

One who knows he is being held out as a member of a partnership and takes no adequate steps to notify those dealing with the firm to the contrary may be held liable as a partner to those who extended credit to the firm on the faith of his reputed relation to it.

A partner cannot repay himself out of the firm's assets for advances made the partnership, except with the assent of his copartners, expressed or implied, and not then until the general creditors are paid.

BULL FROG WHEELBARROWS

Here are some of the reasons why the Bull Frog No. 25A contractors' barrow delivers more service value per dollar of price and more work per dollar of labor cost:

The seamless tray with the high front balances the load easily and dumps easily and cleanly.

The long handles with shaped grips give the user absolute control and ease of operation.

The high risers put the burden on the easy-running Never-Break wheel.

The angle iron leg extension along the handles, and the malleable iron shoes give long life at important points.

This barrow includes everything we have learned in years of wheelbarrow manufacturing. See your jobber or write us about it. We

will gladly send our new catalog to any contractor. It describes

Bull Frog barrows, carts, and scrapers for all factory, mill, mine, contracting, and industrial use.

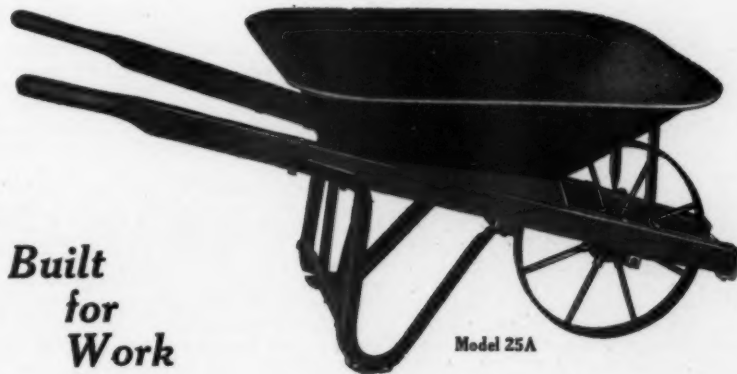
THE TOLEDO WHEEL- BARROW COMPANY

TOLEDO, OHIO

*Branch Offices and
Warehouses*

Philadelphia
233 North
12th St.

Chicago
337 River
Street



**Built
for
Work**

Model 25A

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Validity of a Verbal Promise to Pay Another's Debt

In nearly all, if not all, the states there is in force a law known as the Statute of Frauds, under which certain agreements are not enforceable unless evidenced by a writing signed by the party sought to be held. One of the classes of agreements covered by the statute is an agreement by one person to pay the debt of a second party. But it is universally held by the courts that where a consideration moves to the promisor the statute does not apply. This qualification is illustrated by the recent decision handed down by the Alabama Supreme Court in the case of *Glenn vs. Newell Contracting Company*, 107 Southern Reporter, 801. In that case defendant was a general highway contractor and plaintiff was employed by a subcontractor. Holding that defendant was liable to plaintiff, the Court said:

"While performing a part at least of the work for which plaintiff claimed a recovery, he was not in the employment of defendant—his case was that he was employed by a subcontractor, that he was about to abandon the work because he was not being paid according to his agreement, when defendant, for whom the work was being done, promised to pay for the part already done and as well that remaining to be done if plaintiff would carry on the work to a finish, and that, in consideration of this agreement, he completed the work. On this showing, if accepted by the jury, as it well may have been, plaintiff was entitled to recover. Defendant suggests the Statute of Frauds; but we think it inapplicable, because the promise to pay by defendant was upon a new and valuable consideration, beneficial to the promisor, the defendant."

Subcontractor's Rights on General Contractor's Insolvency

As against a city which awarded a contract for the erection of a school building, insolvency of the general contractor did not relieve a subcontractor from performance of his contract, according to the holding of the New York Court of Appeals in the case of *Dwelle-Kaiser Company vs. Aetna Casualty & Surety Company*, 150 North Eastern Reporter, 517. The subcontractor merely became entitled to insist upon cash payment, in lieu of extending the credit contemplated when solvency of the contractor had been assumed.

Right to Interest on Overdue Claims—Personal Liability of Contracting Partners

Where the amount due under a construction contract is a mere matter of computation, as distinguished from an unliquidated claim such as arises under breach of a contract or commission of an actionable wrong, interest should be allowed on the amount from the time the principal sum fell due, held the Washington Supreme Court in the case of *Barbo vs. Norris*, 245 Pacific Reporter, 414. In the same case it was decided that where a partnership is indebted under a contract judgment may be obtained against the partners personally as well as jointly. This holding follows the general rule of law that partners are jointly and severally liable on the firm's obligations.

Validity of Extended Time for Completing Municipal Work

As against a complaining taxpayer, a city council may extend the time for completing work under a paving contract, held the Kansas City Court of Appeals in the case of *Mound City vs. Shields*, 278 Southwestern Reporter, 798.

Workmen's Compensation for Death of Employee While Making Criminal Assault Denied

A construction company's employee was killed by his superintendent in self-defense while the employee was making a murderous assault to induce immediate payment of his wages. Under these circumstances the Pennsylvania Supreme Court decided (*Curran vs. Vang Construction Company*, 133 Atlantic Reporter, 261) that the employee's widow was not entitled to an award under the Pennsylvania Workmen's Compensation Act, on the theory that the accident arose in the course of the employment. The decedent was held to have abandoned his status as an employee and become a criminal.

The Supervising Engineer as a Court of Last Resort

Perhaps, no construction contract was ever more strongly worded to confer full powers upon a supervising engineer to determine controversies arising between owner and contractor than the contract involved in the case of *E. H. Smith Contracting Company vs. City of New York*, 148 Northeastern Reporter, 655. And yet the New York Court of Appeals, the foremost state tribunal of the country, failed to see in it any quality which bound the contractor by the engineer's manifestly erroneous decision. The contract, which, in part, called for construction of concrete arches for an elevated railroad, recited:

"To prevent disputes and litigations, the engineer shall in all cases determine the amount, quality, acceptability, and fitness of the several kinds of work and materials . . . ; shall determine all questions in relation to the works and the construction thereof, and shall in all cases determine every question which may arise relative to the fulfillment of this contract on the part of the contractor." Etc.

Controversy arose as to the propriety of the engineer's classification of altered work, and the Appellate Division of the New York Supreme Court ruled that the clause above quoted in part made the engineer the final arbitrator, but the Court of Appeals reversed the conclusion, saying:

"Assuming that . . . the question as to whether such work is susceptible of classification under the schedule of unit prices is to be submitted to the engineer, we still think that this action may not be sustained. If his certificate is a condition precedent to payment, it still may not be arbitrarily withheld. So if his action involves an erroneous construction of the contract. If it appears that there is no reasonable basis whatever for his action, if it is patently erroneous, then we find the equivalent of bad faith upon his part, and the contractor is not bound by his decision."

Milwaukee Public Works Has Full Waukesha Engined Equipment

Selects Waukesha Equipped Machines

Milwaukee chose Sterling Trucks and Universal Cranes for their public works. Both trucks and the crane illustrated here have the same sizes engines. More than fifty of the trucks, cranes and fire engines owned by the City of Milwaukee are Waukesha equipped. You can likewise have, in the highest-grade machinery, interchangeable engines and service parts, whether you use trucks, power shovels, pumping engines, pavers or fire engines, if you will select those with Waukesha "Ricardo Head" engines.

Write us about your problems, whether they are about new equipment or a replacement job. Our Sales and Engineering Departments will be pleased to assist you. Write for "Dynamic Thermostat" Book, telling about one patented Waukesha feature, and other Waukesha literature.

INDUSTRIAL EQUIPMENT DIVISION

WAUKESHA MOTOR COMPANY

Waukesha Wisconsin

New York
Aeolian Building

Kansas City
F. L. Phillips Co.

Denver
Wilson Machy. Co.

Tulsa
C. F. Camp Co.

Houston
Portable Rotary Rig Co.

San Francisco
C. A. Watts

Exclusive Builders of Heavy Duty Gasoline Engines for Over Twenty Years.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

A Boom-Type Backfiller for Fordson Mounting

Unit Has Normal Capacity of 40 to 75 Cubic Yards per Hour

It is estimated that 80 per cent of all water, sewer, and gas ditches are being filled by team and scraper or by hand, on account of the high initial cost of the usual types of mechanical backfillers and the excessive cost of moving heavy slow-speed backfillers to and from the jobs. A light, high-speed backfiller recently developed by the Baker Steel and Machinery Company, Omaha, Nebr., is manufactured as an attachment for the Fordson tractor. It is equipped with a double-drum hoist, and is operated entirely by one man from the driver's seat of the tractor. The boom can be adjusted for lengths of 12 to 26 feet and can be instantly adjusted for vertical and horizontal angles. The bucket is constructed entirely of steel and can be adjusted to suit varying conditions.

In moving, the boom is collapsed and hung in a rack beside the head frame. The bucket is loaded on the luggage carrier provided and the

outfit can then be driven from job to job at 6 to 10 miles per hour. About one hour is required to first completely mount the outfit on the tractor. There are no changes made in the standard Fordson tractor in order to mount this backfiller. There are no holes to drill, as holes already in the tractor are used. The manufacturers supply longer bolts where necessary.

The manufacturers state that the backfiller does not interfere with the use of the tractor for normal purposes as the boom and bucket are quickly detached and the tractor can then be used for hauling, grading or any other purpose for which the tractor is ordinarily used. Since this backfiller is light, it may be used for small isolated jobs for which it would not ordinarily pay to move a heavy machine. The normal capacity of the machine is from 40 to 57 cubic yards of material per hour, depending on conditions and types of soil.



**BAKER
BACKFILLER
IN USE ON A BIG
BIG TRENCH**

New Mundy Distributors

THE Mundy Sales Corporation, 30 Church Street, New York City, has announced the appointment of three new distributors for Mundy hoisting equipment. Barrett-Dunning, Inc., 143 East Ohio St., Indianapolis, Ind., has been signed up as exclusive distributor for the state of Indiana to handle the entire line of Mundy equipment. The Bacon Engineering Sales Com-

pany, 251 Erie Building, Cleveland, Ohio, has been appointed the exclusive distributor for the Mundy line of hoisting equipment including the new pattern three-speed hoist for northeastern Ohio. The Toledo Sales & Engine Company, 16 North St. Clair Street, Toledo, Ohio, has been made exclusive distributor for northwestern Ohio of the complete line of Mundy hoisting equipment.

Get after the holes bumps and hollows

FORTIFY your roads now.

Strengthen the weak spots before winter sets in—with the new, improved "Tarvia-KP."

Now!

Only twelve gallons of this new "Tarvia-KP" are needed to a cubic yard of stone to make a perfect patching mixture.

Greatly increased binding strength is the answer, of course—developed after many months of careful research and testing.

Try this new 12-to-1 "Tarvia-KP" mixture. You'll find that it gives you worthwhile savings in cost of materials—and a better job.

A post-card will bring you a practical booklet on "Tarvia-KP." Kindly address our nearest branch.

The Barrett Company

New York	Chicago	Philadelphia	Boston
St. Louis	Cleveland	Cincinnati	Pittsburgh
Detroit	Salt Lake City	Birmingham	Lebanon
Minneapolis	Milwaukee	Bethlehem	Columbus
Youngstown	Syracuse	Toledo	Eschschur
Baltimore	Providence		Buffalo

In Canada:

THE BARRETT COMPANY, Limited

Montreal Toronto Winnipeg Vancouver

Tarvia-KP

FOR COLD PATCHING

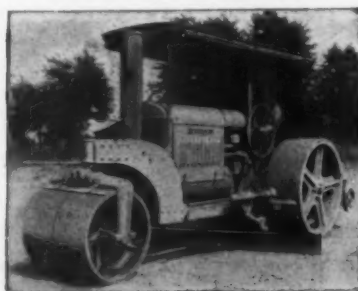
When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

A New Line of Rollers and Graders

Well-Known Line of Road Equipment Now Being Built Around Moderate-Size Industrial Tractor

A NEW line of rollers and graders made by the Galion Iron Works & Manufacturing Company, Galion, Ohio, built about the McCormick-Deering industrial tractor, has just been announced. This line includes three distinct machines, the Galion International roller, the Galion International E-Z Lift grader with rear drive, and the Galion International Standard grader with center drive.

The roller is made in 5-, 6- 7- and 8-ton sizes. The gearing from the tractor axle to the rear roll increases the power of the tractor from 50 to 60 per cent. As regular equipment, these rollers have a nine-tooth scarifier for use on waterbound macadam, gravel, cinder, or hard earth roads and street surfaces. A fully adjustable planer placed under the roller is also a part of the regular equipment. This planer is effective in smoothing and grading streets and road surfaces, subgrades, and on similar work. The roller can then be used to make the surface firm and smooth.



THE INTERNATIONAL GALION ROAD ROLLER

The Galion International E-Z Lift motor grader is particularly designed for smoothing roads and



THE NEW INTERNATIONAL GALION E-Z LIFT MOTOR GRADER

cleaning ditches. It is of the rear-platform-drive type and can be equipped with cab and curtains if desired. The blade and moldboard may be 8, 10, 12, or 14 feet in length as desired. Dual rubber-tired rear wheels, Galion rollers on the rear, or the new Galion crawlers, may be secured as preferred. Roller wheels permit the rolling down of the road as it is being smoothed, while the crawlers give extra traction for heavier work such as cleaning ditches and grading. This grader has a scarifier which is independent of the blades in operation and which is controlled from the rear platform. This grader has the Galion E-Z lift springs and machine-cut worm-lift gearing operating in a bath of oil in the bottom of an oil-tight gear case. Forty-inch lift-wheels add to the ease of operation.

The Galion International Standard motor roller is similar to the E-Z lift in nearly every way except that it has open-lift gearing and the operator's position is near the central part of the machine, where he occupies a comfortable seat, or a spring-mounted platform if he prefers to stand.

A Concrete Designers' Manual

THE second edition of the Concrete Designers' Manual with Tables and Diagrams for the Design of Reinforced Concrete Structures, by George A. Hool, Consulting Engineer and Professor of Structural Engineering, University of Wisconsin, and Charles S. Whitney, Structural Engineer, has just been published by the McGraw-Hill Book Company, Inc., New York, price \$4.00. The tables and diagrams presented in this manual make possible the rapid designing of reinforced concrete structures in accordance with the Joint Committee Recommendations, the American Concrete Institute Recommendations, the New York Building Code Requirements, and the Chicago

Building Code Requirements. This second edition has been entirely revised and a large amount of new material added to adapt it to the latest practice. The standardization of sizes of reinforcing bars and the elimination of unnecessary sizes have permitted an extensive condensation of the material published in the first edition. New tables and diagrams have been added on solid slabs, ribbed slabs, rectangular beams, doubly reinforced beams, T-beams, column footings, retaining walls and continuous beams. The sections on flat slabs, shear reinforcement and symmetrical arches are new. A wider range of unit stresses has been covered because of the general use of higher values.

A SUDDEN SHOWER

LUCKY THE CEMENT WAS SHIPPED IN
BATES MULTI-WALL PAPER BAGS

Five
Separate
Walls

BATES
MULTI-WALL
PAPER
BAGS

**BUY YOUR CEMENT AND PLASTER IN
BATES MULTI-WALL PAPER BAGS**

Invented, Patented and Manufactured by

Bates Valve Bag Co. ~ Chicago, Ill.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Steel Elevator Towers for Construction Work

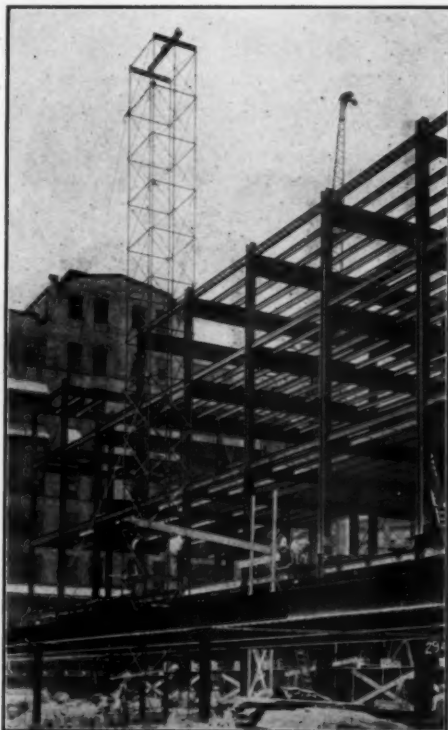
Study of Comparative Costs Shows Great Advantage for Steel Towers

A STEEL elevator tower, as compared with a wooden tower, is superior in strength, speed of erection, and safety, and involves less supervision in erection, less wind resistance, less fire hazard, and lower cost. Since safety is an essential on every construction project, great thought must be given to this factor. The American Tubular Elevator Co., 4700 Second Ave., Pittsburgh; Pa., states that there has never been an accident with an American tubular elevator.

All leg sections, girths, braces, and guys of the American tubular elevator are interchangeable, making it impossible to put any part in the wrong place and making the erection a quick and simple operation which can be performed by unskilled labor as easily as by skilled. The character of the joints and connections, as well as of the weights of the several parts used in the construction of this elevator, is such that one man can easily handle them. Elaborate gin poles and tackles for erection are said to be unnecessary. The dismantling of the elevator usually takes from one-third to one-half the time of erection, and when it is down it is ready to go on the next job and do its work all over again.

As will be noted from the illustration, the elevator is sturdy in construction. The tubular section provides an economical distribution of metal for use as a column. The girths and braces offer a stiffness which not only prevents rattling and vibration, but also minimizes the bending of parts when stored and not in use. The landing panel consists of one horizontal girth and two diagonal braces, or two horizontals and two diagonals, according to choice, designed to accommodate landings at floor levels using landing panel clamps where sleeve bolts are not available.

The cathead is made up of 6-inch channels with spacers and $\frac{3}{4}$ -inch tie bolts, shipped and erected assembled, weighing about 330 pounds. The cathead bearings are equipped with automatic grease-cups. The cathead may be placed in any position, square or diagonally across the top of the tower. The base is made of sturdy I-beams, to insure strength and correct alignment. Guide holes are punched in all of the sills to allow interchangeability. The cage is built with a wooden platform,



AN AMERICAN TUBULAR STEEL ELEVATOR USED IN THE CONSTRUCTION OF THE PITTSBURGH PRESS BUILDING, PITTSBURGH, PA.

Photograph by courtesy of Dravo Equipment Company, Pittsburgh, Pa.

the guide-shoes, which are easily and cheaply replaced, being the only parts subject to wear. The cage comes in two sizes, one 5 feet 5 inches by 5 feet 8 inches, capable of taking care of two wheelbarrows or one concrete buggy, and the other 7 feet 1 $\frac{1}{4}$ inches by 5 feet 8 inches, capable of taking three wheelbarrows or two concrete buggies. The Dravo Equipment Company of Pittsburgh, Pa., are general distributors of these towers.

Talbot Made Manager of Cement Sales

THE Cowham Engineering Company, 111 West Monroe Street, Chicago, Ill., has announced the appointment of K. H. Talbot as Manager of Cement Sales. This company designs, builds and operates portland cement plants. It acts as manager and operator for the three plants of the Consolidated Cement Corporation at Cement City, Mich., Fredonia, Kans., and Mildred, Kans. It is

now constructing for the Florida Portland Cement Company a 1,500,000-barrel plant at Tampa, and has recently announced the construction of a plant at Portland, Maine, to begin in the near future.

Mr. Talbot was formerly with the Centrifix Corporation of Cleveland, and also with the Koehring Company, Milwaukee, and the Universal Portland Cement Co., at Pittsburgh and Chicago.



Why Bear Cat Owners are Boosters



J. E. & G. W. BRYAN, of Portsmouth, Va., use their Bear Cat with clamshell bucket for digging wet sewers.

"I think it is the best kind of machine for my particular work," writes G. W. The features that appeal to him the most, he says, are "the amount of hard surface it takes off—then it can be turned around in small space—is great for unloading materials."

Wm. B. Smith, of Cleveland, Ohio, uses his Bear Cat with clamshell bucket for backfilling, loading surplus, lowering large water pipe, etc.

"Never found it to fail to do all we want of it," he wrote, after using the Bear Cat 18 months. Both of these owners estimate their total operating cost at \$18 per day.

When hundreds of Bear Cat owners are getting results like these it's time for you to do some investigating of the Bear Cat yourself. Speed, low cost, one-man operation, full crawler traction, all around usefulness, dependability—that's the Bear Cat.

Wire, 'phone or send coupon for full information.

THE BYERS MACHINE COMPANY, Ravenna, O.

Builders also of Byers Truckcrane
Sales and Service Throughout the Country

BYERS BEAR CAT

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

You may send your new book
"Ask Bear Cat Owners" to
Name
Address
Town
State
C. E. M.
10-26

A New Two-Ton Truck for the Construction Industry

New Chassis Available with Variety of Bodies for Practically Every Requirement

THE latest additions to the line of trucks made by Graham Brothers, Detroit, Mich., are new models of two-ton capacity. Only two lengths are being made; the shorter, for 9-foot bodies, has a wheelbase of 137 inches, and the longer, which is for 12-foot bodies, has a wheelbase of 162 inches. Both chassis are equipped only with pneumatic tires with the option of either single or dual rears. Where single tires are used, 32 x 6-inch size are fitted in front and 34 x 7-inch at the rear. For dual rear tire equipment, disc wheels are standard with 34- x 5-inch tires both front and rear.

The pressed-steel frame side-rails for the shorter chassis are 7 inches deep and for the longer 7½ inches. Because of the lower bending moments in the short frame its thickness is 3/16-inch, while that of the longer frame is ¼-inch. Front springs on both chassis are 37 inches long, 2 inches wide, and have 9 leaves, while the rear springs are 56 inches long, 3 inches wide, and have 11 leaves. The semi-floating rear axles employ a spiral bevel-gear final drive with a reduction of 6.286 to 1.



GRAHAM BROTHERS' NEW TWO-TON TRUCK

Both service- and hand-brakes are of the internal self-aligning type operating in heavy pressed-steel drums at the rear hub. The brakes are so connected that the pedal operates all four bands, while the hand-brake lever actuates only two.

The power unit is a Dodge Brothers 4-cylinder engine as is used on all Graham trucks and motor coaches, with a heavy-duty truck type transmission. The stronger frame, springs, and other chassis parts are made to insure satisfactory service with two-ton loads.

Measuring Device for Water for 27-E Paver

Manufacturer Claims Device for Accurate Timing and Measurement Results in Increased Strength of Concrete

THE water-supply system developed by the Koehring Company, Milwaukee, Wis., for use on its 27-E paver is claimed to deliver the correct amount of water to the mixing drum in the shortest interval of time demanded by practical operation. Tests and experiments have conclusively shown that the correct timing of the admission of water into the mixer drum, and accurate measurement of that amount, definitely increase the strength of the resultant concrete.

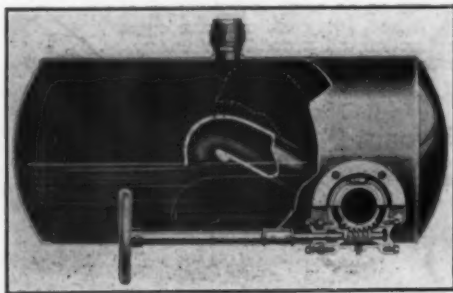
The charging skip of the Koehring 27-E paver at the right instant automatically opens the balanced three-way valve, starting the discharge of water. The rising skip trips a lever on the valve which is carried over the center and positively

to the end of its stroke by a spring and at that instant allows the water to enter the mixing drum just before the material enters. The water therefore goes all around the blades and buckets, washing away the accumulation of the previous batch and assuring a clean drum. The water flows until all the aggregate is in the drum, assuring that the aggregate will be wet as soon as it has entered the drum.

The automatic opening of the water valve not merely saves one operation for the operator, but by being correctly timed with the other operations of charging gets all the materials into the drum in minimum time.

Accuracy of measurement and clean, non-dripping discharge is accomplished by specially designed component parts of the entire water-supply system. The regulating valve determines the amount of water supplied to each batch of aggregate. The peculiarly shaped hooded intake on the measuring pipe inside of the tank uses the siphon gravity principle originally brought out by the Koehring Company in 1921. The adjustment of this measuring pipe for various quantities of water is controlled by a hand-wheel-operated worm and gear. The hand-wheel is easily accessible to the mixer operator and the gearing is self-locking in any position.

A place for a padlock is provided so that the valve, when set for a certain quantity of water,



SECTIONAL VIEW OF THE NEW KOEHRING WATER TANK

A Full Revolving Back-Filler

Buckeye *✓* **NEW** *in big performance and general utility*

Buckeye saw the need for a Back-Filler with greater performance ability than ever before conceived—and filled it with this new Utility Back-Filler.

The entire platform turns in a full circle. No "jockeying" to get in position. *Swings* into line in a fraction of a second. The boom has a quick adjustment from 29- to 33-ft. lengths—a short range adjustment from 21 to 25 ft. Such variation in reach meets every possible condition.

The travel is on full-length Alligator Traction. Over soft mud without slipping; over paved streets without damage to their surface.

The power plant is the kind that has plenty of *capacity*—a heavy-duty gasoline unit of the finest design and manufacture. The entire construction is the kind that Buckeye has always been famed for—All operations are power actuated and

controlled by the operator by levers banked within easy reach. *The toughest steel, and plenty of it where it's needed—*

Machine-cut gears and precise assembly that guarantees long service.

From this bare description you can easily appreciate that the new Utility Back-Filler will outperform the ordinary back-filler any day and every day.

Add the usefulness of this machine as a dragline or light crane, and you will see why contractors who have viewed the Utility Back-Filler say it's the greatest development of the year. As a crane, it may be equipped with a clamshell for handling and digging.

Ask for illustrative and descriptive bulletin.

THE BUCKEYE TRACTION DITCHER COMPANY

Findlay, Ohio

Manufacturers of Trench Excavators (both Wheel and Chain-and-Bucket Types), Pipe-Line Trench Excavators, Tile and Open Ditchers, Back-Fillers, Pipe Screwing Machines, Curb Diggers and Clay Diggers.

There's a Buckeye Sales and Service Office Near You



BUILDERS OF TRENCH EXCAVATORS FOR OVER 30 YEARS

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

can be locked. If the regulating valve is moved, the open end of the measuring pipe will be on an arc described along the center of the tank. This assures the least possible deviation from accurate measurement when the mixer is working on a grade or superelevated curve.

The measuring tank is automatically filled when the balanced three-way valve is in filling position. The water from the top of the tank down to and no further than the opening in the end of the regulating pipe can run into the mixing drum when the balanced valve is tripped. The design of the mouth on the regulating pipe is such that all flow of water to the mixing drum will positively and immediately stop just at the instant when the water level in the measuring tank reaches the opening of the measuring pipe and

air which has entered the measuring tank through the check valve breaks the siphon, so that there can be no dribble.

The siphon is self-priming, positive, and automatic. The measuring tank is tested to 150 pounds hydrostatic working pressure. It is provided with a check valve which opens as soon as the balanced three-way valve is tripped, admitting air to the measuring tank, so that there is a full, steady flow of water to the mixing drum, and the valve does not close until the tank is again filled with water for the next batch.

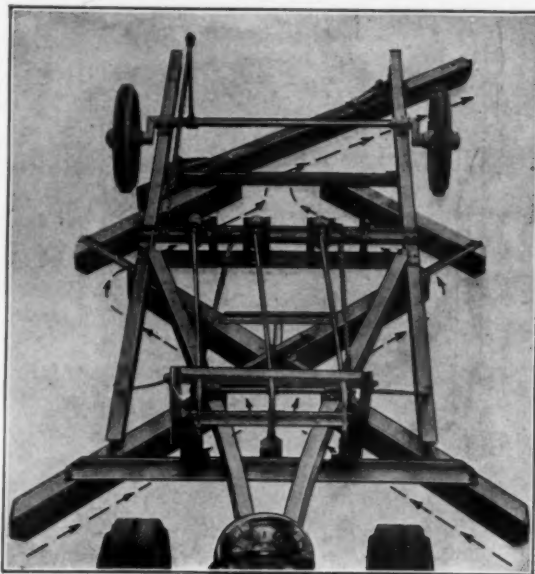
Straight flow from the tank to the drum secures a fast, clean discharge of water. The diameter of the discharge pipe is $3\frac{1}{2}$ inches. The discharge pipe in the mixing drum is a casting and is securely fastened so that it cannot move.

A New Road Maintainer with Unique Features

One-Man Machine Works Material Across Road Four Times in One Trip

THE new Adams one-man road maintainer No. 6, manufactured by J. D. Adams & Company, Indianapolis, Ind., is so designed that it can be hitched to any light tractor by a simple drawbar and clevis, thus leaving the tractor readily available for other work, and the maintainer need not be held up for any possible tractor repairs. The maintainer has 40 feet of blade, which works the road surface four times, thus doing four times the work of a motor grader or a single-blade machine. The blades are rigidly fastened to the main structure and cut in the same plane. The machine itself rises and lowers with the blades. Maintainer controls are conveniently placed so that one man in his normal position on the tractor can easily control both machines.

The Adams one-man maintainer cuts 9 feet wide. The illustration shows the manner in which the loose material cut by the blades is worked back and forth across this 9 feet four times in one passage. The operator sets the blades to cut the proper depth and pressure according to road conditions. Adjustments are easily made without stopping.



THE NEW ADAMS MAINTAINER, SHOWING PATH OF EARTH

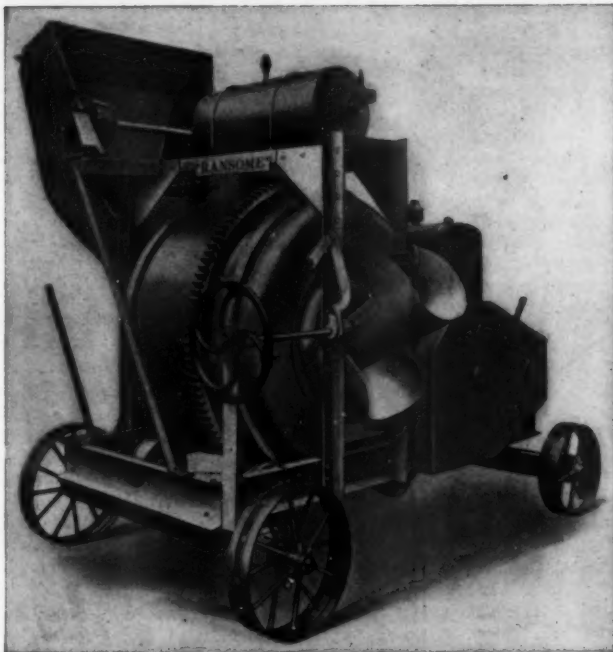
Summary of Accidents in Steel Erection

THE following segregation of 100 accidents in steel erection may serve as a warning:

1. Falling objects 40
 - 6 Ironworkers themselves struck by falling rivets, bolts, and needle beams.....
 - 34 in other trades, such as masons, fireproofers, carpenters, electricians, wire lathers, painters, elevator constructors. Of the 34 injured, five were struck by hot objects....
2. Ironworkers injured by throwing of hot objects, struck or burnt by rivets or scale from rivets 10
3. Handling iron by derrick, such as hoisting from the street, storing and erecting..... 17

4. Handling by hand.....	4
5. Ironworkers falling from beams, floors and scaffolding	6
6. Ironworkers slipping on beams and floors....	6
7. Ironworkers struck by mauls of fellow workmen	4
8. Ironworkers handling defective equipment, plungers, snaps and air hammers.....	4
9. Ironworkers—nail punctures	3
10. Ironworkers struck by derrick or load.....	3
Total	96
Miscellaneous	4
Grand total	100

here's a 10-S that is a 10-S Mixer!



10-S Standard
Building Mixer
on trucks, with
Power Loader
and Automatic
Water Tank.

Look at that drum—39 inches long by 51 inches in diameter, inside measurements. There's real 10-S capacity for you. And it's a steel drum, too, with flanged heads, electrically welded. Timken bearings on the Drum Rollers, too.

And get the idea of that Control—one set of levers at the drum end of the mixer gives the operator complete control and does away with all need for levers on both sides of the machine. It's certainly one real 10-S mixer.

Made with steel or rubber-tired wheels; low charging chute or with power loader and automatic water tank; 4 cyl., 15 H. P., vertical radiator cooled LeRoy gasoline engine or either AC or DC electric motor.

If you're thinking of buying a 10-S Standard Building Mixer, look this over. It has the stuff in it. Write for copy of Bulletin.

RANSOME CONCRETE MACHINERY CO.

DUNELLEN

NEW JERSEY

**RANSOME
DOMESTIC
REPRESENTATIVES**

ALBANY, N. Y.
Super-Spank Supply Co.
Inc.

ASHVILLE, N. C.
Burch Bros. Culvert &
Machinery Co.

ATLANTA, Ga.
Harry G. Williams

BALTIMORE, Md.
Olson & Ransome

BIRMINGHAM, Ala.
South-Moore Supply Co.
Inc.

BOSTON, Mass.
The Clark-Walker Co.

BROOKLYN, N. Y.
John F. Fitzgerald

BUFFALO, N. Y.
The Wheeler-Murray Co.

BUTTE, Montana
Western Supply Co.

CANTON, Ohio
J. G. Mott & Co.

CHARLESTON, W. Va.
Capital City Supply Co.

CLARKSBURG, W. Va.
Clarksburg Supply &
Equipment Co.

CHARLOTTE, N. C.
W. Fred Casey Co.

CHATTANOOGA, Tenn.
Conner Sales Company

CHICAGO, Ill.
Ransome Concrete
Machinery Co.

CLEVELAND, Ohio
R. F. Fogg Co.

COLUMBIA, S. C.
Fred D. Marshall, Inc.

COLUMBUS, Ohio
John McMillin

DALLAS, Texas
J. W. Bartholomew Co.

DAYTON, Ohio
Allen & Bradstreet

DEVER, Colo.
Chas. & Hild Co.

DETROIT, Mich.
W. H. Anderson Tool &
Supply Co.

EL PASO, Texas
Eos L. Johnson

GREENSBORO, N. C.
Burch Bros. Culvert &
Machinery Co.

JACKSONVILLE, Fla.
Boady & Gull Machinery
Co.

LOS ANGELES, Cal.
C. E. LeRoyman Co.

MEMPHIS, Tenn.
Fitzgen Thomas Iron-Co.

MILWAUKEE, Wis.
Wm. H. Hale & Co.

MOBILE, Ala.
Lawrence-Bonding Co.
Inc.

MONTREAL, Canada
Canadian Equipment Co.

MAINTVILLE, Tenn.
H. L. Stinkard

NEWARK, N. J.
Johnson & Deelman,
Inc.

NEW HAVEN, Conn.
The Clark-Walker Co.

NEW ORLEANS, La.
Die N. Opre

NEW YORK, N. Y.
Fitzgerald & Hudson

HUNTSVILLE, N. Y.
F. O. MacDonald

PHILADELPHIA, Pa.
Olson & Ransome

PITTSBURGH, Pa.
Ransome Machinery Co.

RICHMOND, Va.
Ed. P. Phillips

SAN ANTONIO, Texas
Frank Iron Works

SAN FRANCISCO, Cal.
Ransome & McDonald,
Inc.

SEATTLE, Wash.
Washington Machinery &
Storage Co.

SPRINGFIELD, Wash.
General Machinery Co.

SPRING LAKE, Mich.
W. H. Anderson Tool &
Supply Co.

ST. LOUIS, Mo.
Central Equipment Co.

STACYVILLE, N. Y.
Hunter L. Bots

TAMPA, Fla.
Tampa Machinery Co.

TOLLEDO, Ohio
National Supply Co.

TORONTO, Ontario
Clark Culvert Ltd.

VANCOUVER, B. C.
J. G. Ransome Co.

WATERLOO, N. Y.
Lee & Corbridge

WEST PALM BEACH, Fla.
Eos Sand & Rock Co.



212

Ransome Standard Building Mixers

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

A New Five-Ton Tractor

Simplicity, Compactness and Low Center of Gravity Are Featured

THE new 5-ton Monarch Model-G tractor made by the Monarch Tractors Corporation, Springfield, Ill., has a draw-bar capacity of fully 30 horsepower; its full five tons weight enables this power to be effectively employed; the truck members have the proper oscillation and flexibility to provide adequate traction in the widest variety of field conditions; it is of compact construction and has a low center of gravity to permit working in narrow quarters and on steep grades; it is of simple design, easily lubricated, and has full protection against the entrance of dust and dirt; it is steered readily, and has rugged durability. These are the features mentioned by the manufacturers in placing this new model on the market.

The general dimensions of this Monarch tractor are: length, 10 feet over all; width, 6 feet 2 inches over all; height, without top, 5 feet 6 inches; length of ground contact, 5 feet 6 inches; ground clearance, 1 foot 3 inches. It has three speeds forward and one reverse, forward speeds being 1.75, 2.34 and 3.75 miles per hour and the reverse 1.5 miles per hour. Steering is accomplished through friction brake-drums located at the ends of the differential shaft at each side. By means of the steering wheel convenient to the operator's seat, contracting bands $3\frac{1}{2}$ inches wide operate on the brake-drums, which measure 16 inches in diameter.

Each track comprises 20 links or shoes, each 12 inches wide. On the inner or upper side of the shoe, two low rails are cast integral and the truck wheels roll smoothly along the rails. The inner edge of the rail is rounded so as to give a smooth rolling action to the truck wheels. Near each end of the inner or upper surface of the



THE NEW MONARCH 5-TON TRACTOR

shoe are cast two lugs of special design forming a driving contact with the staggered teeth of the driving sprocket. As the track is carried forward one section at a time the teeth in the front sprocket engage with the lugs on the track shoes. With the tracks thus firmly held, the truck wheels stay on the rails under all conditions. The shoe has a smooth ground contact. Detachable grouser-ers may be fitted for extreme conditions in mud, snow, or ice.

The tractor is equipped with a roadmaker's top designed for the attachment of full glass winter enclosure or curtains, as desired.

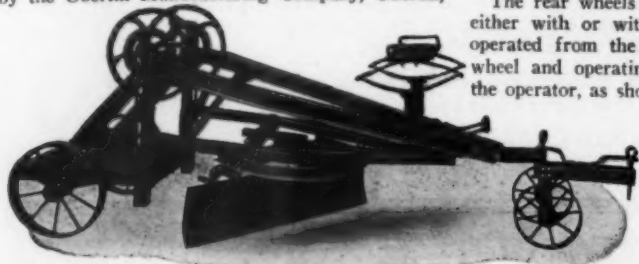
A Grader and Scarifier for Team or Tractor Operation

An Effective Unit for Highway Contractors' Service

THE Ohio Leader, a team- or tractor-drawn grader which also carries a scarifying unit, is built sufficiently strong for rugged work by the Oberlin Manufacturing Company, Oberlin,

adjustment of the blade is taken care of by a latch wheel and chain hoist mechanism, and the lateral adjustment is by a pin slide feature.

The rear wheels of the Ohio Leader are made either with or without flanges. The machine is operated from the rear platform, with the hand wheel and operating mechanism within reach of the operator, as shown in the illustration. One of

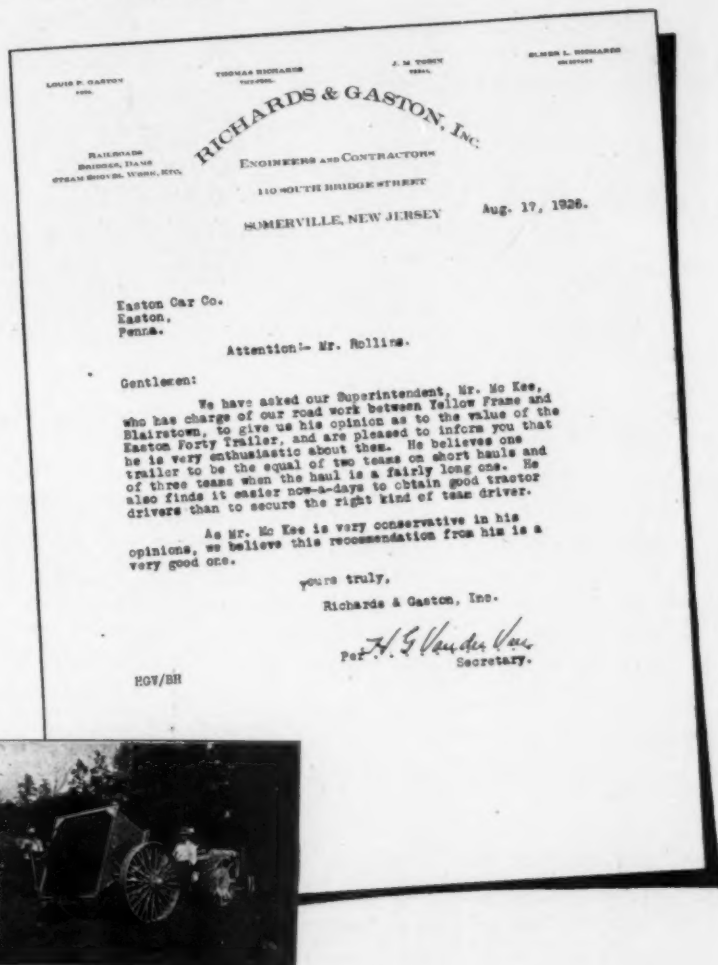


**THE LEADER
ROAD GRADER
WITHOUT
SCARIFIER**

Ohio. The scarifier can be used in conjunction with the blade if desired. The blade is equipped with fenders, making it a very effective unit for leveling material or subgrading. The vertical

the distinct advantages of the machine is that it can be turned within the forms on a concrete road, making it excellent for handling the final subgrade work on a concrete road job.

Construction Superintendents don't talk like this unless they mean it. We would like to tell you of the experiences other Road Contractors are having with Easton "Forty" Trailers.



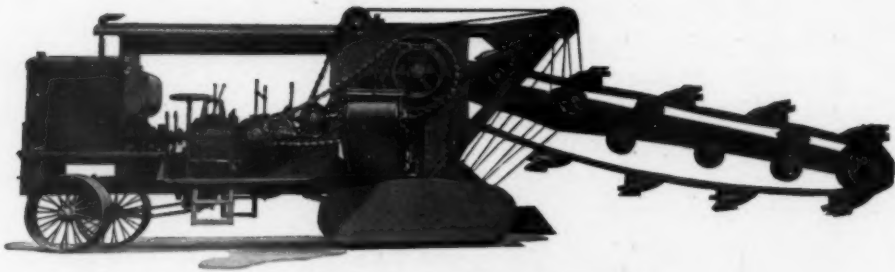
EASTON CAR & CONSTRUCTION CO.

Offices and Works

KANSAS CITY, MO.

EASTON, PA.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



THE NEW P & H LADDER-TYPE TRENCHER

A New Ladder-Type Trencher

Machine Is Product of Fourteen Years' Development

TWO new models of ladder-type trenchers known as Model 10-30 and Model 15-36 have been developed by the Harnischfeger Corporation, Milwaukee, Wis. The first is built to cut trenches up to 13 feet deep and from 22 to 35 inches wide, and the second to cut trenches up to 15 feet deep and from 22 to 42 inches wide. Both machines embody the same principles of design and construction.

All the main machinery in these models is mounted in one cast-steel case, fully enclosed. All drive-gears have double cut teeth, and every motion has three speeds forward and one reverse with no changing of sprockets. The levers are arranged for control from either side of the machine. Full protection is provided for all parts of the machine as well as for the operator.

The motor to operate the machine is of the four-cylinder heavy-duty type and is equipped with an air cleaner and an impulse-coupled magneto and has pressure feed lubrication to all main and connecting rod bearings. The main connection to the motor is made through a balanced Twin Disc clutch which is fully enclosed.

The digging boom is made in a box section of channels top and bottom with plates riveted on the sides. It is adjustable to various depths of trench, the extension joints overlocking so that strength is assured at this point. The boom is hinged directly over the rear axle, throwing its weight on the large bearing area of the corduroy tread and preventing the necessity of counter-

weight on the front of the machine. The bucket chain is made up of heat-treated electric steel links. These are reversible and easily removed. They are made with a dovetail-wedge pin joint which holds the links securely, but which can be taken out or replaced easily.

The buckets are shaped of pressed steel and are extra heavy with a reinforced tool-steel lip. Connection with the digging chain is made by small ears of alloy steel which may be replaced when worn without replacing the whole bucket. The bucket cleaner is hinged on the excavator shaft and is arranged so as to scrape off all sticky mud or clay. It is held in position by a compression spring which will allow a stone or chunk of wood to pass through without breakage.

The boom position is under the control of the operator at all times, so that he can dig accurately to grade regardless of soil conditions and ground contour. The boom hoist is driven through a self-locking worm-gear controlled by friction clutches which prevent any drifting or dropping of the boom. The actual hoisting or crowding is accomplished by a set of cables driven from grooved drums at the top of the crane held by wedge blocks. The hoisting cable is in one piece, reeved so that the pull is equalized for both sides of the boom. The crowd is positive in operation in that it is operated automatically in conjunction with the hoist. The tension of these cables is maintained by screws and heavy coil springs located near the corduroy axle.

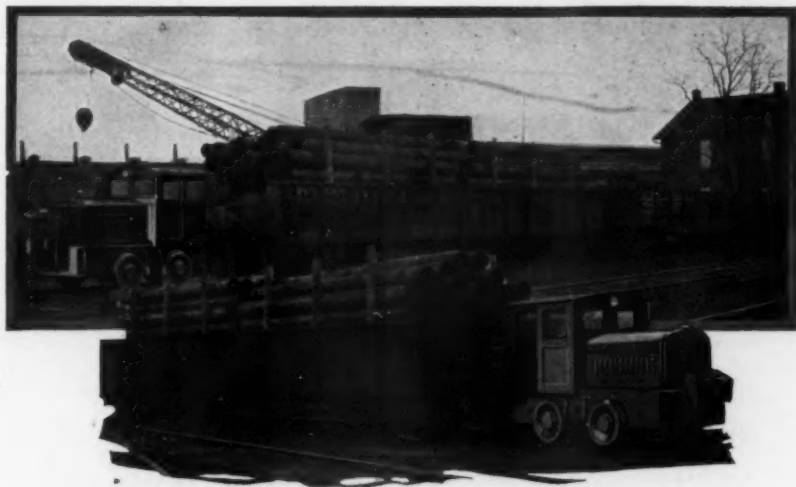
McMyler-Interstate to Begin Structural Steel Fabrication

THE McMyler-Interstate Company, Cleveland, Ohio, has announced that it will immediately re-enter the structural steel fabricating field, coming into the market with plant facilities for producing from 800 to 1,000 tons per month. At the Bedford, O., plant of this company, more than 30,000 square feet of floor space will be exclusively devoted to the fabrication of structural steel. Under the present arrangement it is planned to have the department assigned to this work devote

its entire attention to structural steel fabrication. The firm will not enter the erection business.

Hayman Becomes Los Angeles Full-Crawler Distributor

THE Full-Crawler Company, 500 Clinton Street, Milwaukee, Wis., has announced the appointment of the B. Hayman Company, Inc., 148 North Los Angeles Street, Los Angeles, Calif., as distributor for Trackson Full-Crawlers for Fordsons in the territory previously covered by the O. R. Peterson Company, Los Angeles.



Faster Haulage—Lower Costs

Whitcomb Locomotives with their more than ample horse power per ton, assure rapid haulage at low cost.

Instances of haulage at less than $\frac{1}{2}$ cent per ton are not uncommon and when you consider the fact that maintenance is a negligible item and that a licensed operating crew is not necessary, it is easy to see how "Whitcombs" will fit into your haulage program.

For contract haulage, or switching cars at storage points, "Whitcombs" are ideal. They are made in all sizes and gauges and may be had powered by either gasoline engines, electric storage batteries, or fitted with a trolley.

Our Engineering Department is thoroughly conversant with all types of haulage problems and will be glad to help you select the proper type of locomotive for your work.

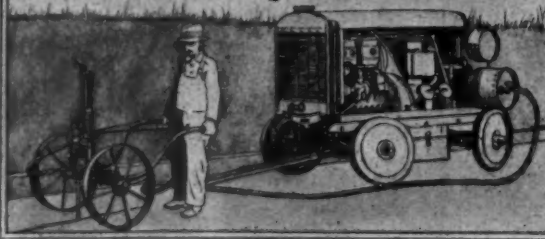
GEO. D. WHITCOMB COMPANY
ROCHELLE, ILLINOIS
Offices in principal cities



GASOLINE - STORAGE BATTERY - ELECTRIC
WHITCOMB
LOCOMOTIVES

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Helpful Material



The catalogs and pamphlets listed below are available for free distribution. Contractors and Engineers who check over these pages each month and write for such material as interests them, will find this a valuable means of keeping up to date on the subject of machinery and equipment.

CONCRETE CARTS READY FOR DELIVERY

When a contractor needs concrete carts he does not want to wait. The order goes to the house that can deliver. Akron concrete carts with underslung steel heat-treated axles, removable bushings and grease cups, 12-gage hoppers and the right balance for easy handling, are described in the new catalog and price list of the Akron Barrow Co., 3140 East 65th St., Cleveland, Ohio.

ARE YOU STILL USING TEAMS FOR DIRT MOVING?

The Miami Trailer-Scraper Co., 610 S. Clay St., Troy, Ohio, has recently issued a folder which shows that the Miami one-man power scraper positively makes teams an expense, as it can move more earth per day than other equipment and save from \$10 to \$15 daily over team-scraper work.

DIRT HANDLING BY ONE MAN

Loading, moving, dumping, or spreading the earth, no matter what the operation, all is controlled from the driver's seat when a Schaefer automatic scraper is attached to your tractor. The Contractors Circular, issued by the Gustav Schaefer Wagon Co., 4180 Lorain Ave., Cleveland, Ohio, tells the whole story. A copy is yours for the asking.

A PLOW THAT REALLY ROOTS

Ward plow No. 69 grips its way through the toughest pavements and roads like a mighty, powerful giant. The Ward Two-in-One plow saves the cost of extra equipment, converting a rooster into a share plow economically and quickly. Complete details may be secured from the Ward Plow Co., Batavia, N. Y.

CALCIUM CHLORIDE CUTS THE CURING PERIOD FOR CONCRETE

It is no longer necessary to wait 28 days to open up concrete roads. By using Solvay flake calcium chloride the curing period can be cut to 7 days or less. If you desire some really helpful knowledge on this subject, you will find it in the literature of the Solvay Process Co., Wing & Evans, Inc., Sales Dept., 40 Rector St., New York.

AUTOMATIC BOTTOM-DUMP BUCKETS THAT DO NOT KICK

The Unionloc automatic dump-buckets, made under the Lockwood patent by the Union Iron Works, Inc., Hoboken, N. J., and which are hingeless, with self-adjusting doors and do not kick when dumped, are described completely in literature which may be secured from the manufacturer.

CENTRIFUGAL PUMPS FOR SEWAGE OR GRITTY WATER

Bulletin D-2, issued by the Lawrence Pump & Engine Co., P. O. Box 70, Lawrence, Mass., describes Lawrence Vortex centrifugal pumps specially designed for pumping sewage or any liquid carrying more or less solid material, or for use by contractors in all types of construction work.

TRUCKS FOR THE ROAD BUILDER

Graham Bros., Detroit, Mich., has issued a book of facts for the guidance of road builders and contractors in the selection of motor trucks which not only describes various types of bodies for service of this kind, but contains very helpful articles on wider streets and highways, railroad-crossing elimination, economy of motor truck operation and other valuable data.

A MORTAR MIXER THAT MIXES

The Tal-Flo mixer which will mix all kinds of coloring mortar successfully in one-quarter the time of other machines and which has a number of special features that make all the work more effective and easier, is described in the literature of the Talbot-Flood Manufacturing Co., Inc., 521-23 Dwight Bldg., Kansas City, Mo.

AN EXCAVATOR THAT CUTS THE COST OF DIGGING

A live boom, a powerful cable crowd, a single-lever dump control, and a special crawler, feature the Mead-Morrison crawler excavator, described in Bulletin No. 131 which may be secured from the Mead-Morrison Mfg. Co., 748 Prescott St., Boston, Mass.

AN EASILY-OPERATED, LARGE-CAPACITY SCRAPER

The Euclid scraper, which moves more earth, reduces labor cost, saves time and money, and is easy to operate, is described in a folder issued by the Euclid Crane & Hoist Co., 108 Chardon Road, Euclid, Ohio.

A TRAILER THAT REPLACES THREE TWO-HORSE TEAMS

The Easton trailer, which takes the place of three two-horse teams and which is self-dumping and self-righting, is described in the literature of the Easton Car & Construction Co., Easton, Pa.

HANDY HOISTING AND HAULING

This is the title of a new booklet, No. 132, made up chiefly of illustrations showing the Sullivan Turbinair hoist used by contractors in various ways. If you wish a copy of this booklet, write direct to the Sullivan Machinery Co., 162 South Michigan Ave., Chicago, Ill.

A BULLETIN ON HALF-YARD SHOVELS, CRANES AND DRAGLINES

The Speeder Machinery Corp., Sheffield, Iowa, has issued in its Bulletin J-26 a great deal of helpful information on excavation including a complete description and illustrations of the Model B-1 half-yard shovel, crane, and dragline.

ROAD-GRADING AND DRAGGING MACHINES

The Ohio Leader, a one-man grader with scarifier attachment, the Little Yankee, a reversible grader of special design for subgrade and surface leveling work, also with scarifier, and the Ohio two-blade road drag with a strong, rigid steel frame, made in 7- and 8-foot lengths, are described in the latest literature of the Oberlin Mfg. Co., Oberlin, Ohio.

HIGH-CAPACITY AIR-COMPRESSOR AT REASONABLE COST

O. K. portable air-compressors of 118, 160 and 265 cubic feet piston displacements, with various mountings, are described in the literature of the O. K. Clutch & Machinery Co., Columbia, Ohio, which also makes gasoline and electric hoists.

A STORAGE BIN FOR ROAD PAVES

A bin which is simple in design and with unit construction that makes it possible to erect the bin and have it ready for use in a few hours, with sides, partitions and bottom of 2-inch dressed flooring with interlocking joints, dispensing with nails, bolts and spikes, and with batcher gates easily operated from the ground, is described in a folder issued by the James B. Seaverns Co., 1315 South Oakley Ave., Chicago, Ill.

WHEELBARROWS BUILT FOR WORK

Better wheelbarrows which mean more and better work and which have specially shaped handles, making it possible for a man to handle the barrow faster and with less effort, and which are equipped with a "Never Break" wheel, are described in the Bull Frog barrow literature issued by the Toledo Wheelbarrow Co., Toledo, Ohio.

EXCAVATORS WITH SHOVEL ATTACHMENT

Working in sand or gravel banks, handling materials from stock piles to truck, working in a borrow pit, or grading a street or road, are just the jobs for an Insley shovel, which is capable of handling 200 to 450 cubic yards a day. Catalog No. 40, issued by the Insley Manufacturing Co., Indianapolis, Ind., describes this excavator completely.

PERRY SCRAPERS



**Time, Labor
and
Money Savers**

**Fills, Hauls and Dumps
with Tractor in Contin-
uous Forward Motion—
No Stopping or Backing!**

This is a one man tractor scraper that is really efficient, mechanically simple, practical, and durable. By means of a conveniently located lever the tractor driver easily controls every movement of the scraper. In filling he can vary the depth of cut as desired; making a deep cut or a shallow cut. In unloading he can dump in a heap or spread to grade. And the whole process is accomplished with the Tractor in continuous forward motion. **NO STOPPING OR BACKING.**

With this outfit grading and earth moving work can be done at lower cost per cubic yard than has heretofore been possible, and lower costs mean bigger profits to the contractor.

For more information, write to

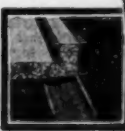
THE PERRY COMPANY Box 105 Sidney, Ohio



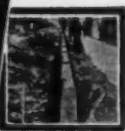
CURB AND GUTTER



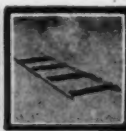
CURB



INTEGRAL CURB AND BASE



BATTERED CURB



SIDEWALK



ROAD FORMS



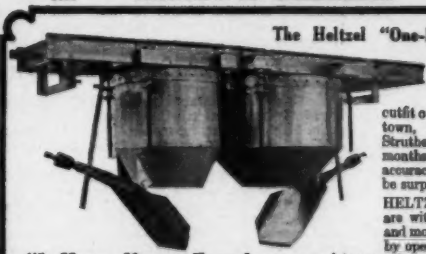
CAR LOADERS



JOINT MACHINES



MANHOLE FORMS



The Heltsel "One-Man" Measuring Batchers

referred to by Albert R. Haenny, City Engineer, Struthers, Ohio, were used in connection with a HELTZEL TRAILER Batcher outfit owned by Grady & Turner, Youngtown, Ohio, contractors, in work at Struthers, Ohio, which covered several months. Mr. Haenny added that "The accuracy of the measuring device cannot be surpassed."

HELTZEL "ONE MAN" BATCHERS are without any exception the speediest and most efficient built today. One man by operating a single lever, performs the complete operation of filling, cutting off, dumping the batch of sand and stone, closing the lower and opening the upper gates in less than 10 seconds. Write today for catalog of HELTZEL BATCHERS, TRAILER BATCHER BINS, SECTIONAL STEEL BINS and CAR UNLOADERS.

**"I Have Never Found a
Variation of More Than 10
Lb. in a 6,500-Lb. Load."**

THE HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO



BATCHER



TRAILER BATCHER BIN



STATIONARY BIN

HELTZEL

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

REMOVING SURFACE IRREGULARITIES FROM CONCRETE

The Berg concrete surfacer and finisher which is unequalled for removing fins, board or form marks, and all surface irregularities, from concrete, is described in detail in the literature of the Concrete Surfacing Machinery Co., 4609 Spring Grove Ave., Dept. F, Cincinnati, Ohio.

CONVEYORS THAT CUT MATERIAL-HANDLING COSTS

Burch conveyors that convey at a speed which insures profit by lessening the cost of material handling and thus help contractors to keep their trucks moving, are described in the literature which may be secured from the Burch Plow Works Co., Dept. MA, Crestline, Ohio.

STANDARD HOISTS AND DERRICKS FOR CONTRACTORS

Clyde steam, electric, gasoline and belt-driven hoists and derricks which are standard in many contracting operations, are described in a helpful illustrated catalog issued by the Clyde Iron Works Sales Co., Duluth, Minn.

SHOVELS, SPADES, SCOOPS AND SPECIALTIES

The American Manufacturing Co., Chattanooga, Tenn., in its No. D catalog and price list illustrates and describes its extensive line of shovels, spades, scoops, hardware, steel, and wire specialties.

MORE YARDS OF CONCRETE PER DAY

The Chain-Belt Co., Milwaukee, Wis., has issued in its Catalog 137 some very pertinent information regarding Rex 7-8 and Rex 5-8 mixers and other data built around the comment "We're an idea contractors are in business to make money."

TRACTORS FOR HIGHWAY BUILDING AND MAINTENANCE

Only the best equipment can be expected to stand up under the heavy tasks of highway building and maintenance. Tractors particularly are subjected to treatment that can be withstood only by a product that is right. Cletrac, the year-round tractor for road work, is described in the literature of the Cleveland Tractor Co., Cleveland, Ohio.

ROAD FORMS THAT HOLD THE GRADE

"The most uniform in grade and line I have ever supervised" is what one prominent city engineer says of Heltzel curb and gutter forms. Information regarding Heltzel curb, curb and gutter, and integral curb and base forms, will be found in a new bulletin just off the press and which may be secured from the Heltzel Steel Form & Iron Co., Warren, Ohio.

ROCK DRILLS THAT ARE JUST THE RIGHT SIZE

The "Jackhammer" which is a superior type of rotating hand-held rock drill made in just the right size for a long day's drilling, is described in Bulletin 446 issued by the Ingersoll-Rand Co., 11 Broadway, New York.

DRILLS, CONCRETE BREAKERS AND CLAY DIGGERS

The Waugh sign on a rock drill, drill steel sharpener, concrete breaker or clay digger, is the contractor's assurance of high speed, high efficiency and completely satisfactory performance. If you are interested, write for the literature of the Denver Rock Drill Mfg. Co., Denver, Colo.

DERRICKS AND WINCHES

The Dobbie Foundry & Machine Co., Niagara Falls, N. Y., will be pleased to send a copy of its complete catalog No. 22, describing the complete line of Dobbie derricks, winches and fittings.

BETTER ASPHALT STREET REPAIRS

A letter or postcard addressed to the Equitable Asphalt Maintenance Co., Kansas City, Mo., will bring you full and complete information regarding the Equitable surface heater which is operated with a gasoline engine, is designed for power at low speed, eliminates all dirt, water and steam, and makes it possible to resurface without flame from 1,500 to 2,000 square yards of pavement in an 8-hour day.

MATERIAL-HANDLING BUCKETS AND MEASURING BINS

The Erie 117-ton Aggre-Meter plant for loading compartment trucks or batch-boxes or for loading batches direct into the mixer hopper, furnished in all-steel or a combination of steel and wood, and the Erie one-yard "Peerless" bucket which has great closing power, long cable life and takes a big load at every grab, as well as the Erie Special digger bucket, are all described in the literature of the Erie Steel Construction Co., Erie, Pa., which may be secured on request.

PERMANENTLY MARKED TOOLS AND EQUIPMENT

The Everhot branding torch, which brands or solders continuously, permanently marks your tools and your equipment, making them safe from the hands of pilferers, is described in a circular that will be sent free by the Everhot Mfg. Co., Maywood, Ill.

OIL-BURNING KETTLES FOR ROADS AND ROOFS

Connery's oil-burning kettle, Style J, is recommended by the manufacturers, Connery & Co., Inc., 4,000 North Second St., Philadelphia, Pa., for highway maintenance work and for the roofing contractor. Low fuel cost and absolute temperature control are assured by the construction of the inside tank which keeps the hot and cold materials separate. Write for the circular describing this kettle.

A NEW COLD-PATCHING MATERIAL

The new improved Tervia K-P is the same dependable material plus vastly increased binding strength and may be used in proportions of 12 gallons to each cubic yard of aggregate for patching. A postcard addressed to the Barrett Co., 40 Rector St., New York, will bring you a practical booklet on "Tervia K-P."

RELIABLE HOISTING BLOCKS

Information regarding Star Brand hoisting blocks made by the Boston & Lockport Block Co., East Boston, Mass., and which are always reliable and made for every condition of service, may be secured from this company.

PORTABLE AIR-COMPRESSORS FOR EVERY DEMAND

Buhl air-compressors, which are made by the Buhl Co., 405 S. Dearborn St., Chicago, Ill., in a variety of sizes and types to meet every portable compressor demand, are described in bulletins which may be secured by interested contractors on writing to the Buhl Company.

A BOOK ON THE USE OF EXPANSION JOINTS

Complete data on the use of expansion joints are contained in an interesting 52-page book which may be secured without obligation from the Philip Carey Co., Lockland, Cincinnati, Ohio, manufacturers of Carey Elastite expansion joints, which consists of a heavy body of fibrous asphaltic compound sandwiched between two layers of asphalt-saturated felt.

A GASOLINE CRANE WITH MULTI-PLANE MOUNTING

Problems of field adjustment or replacement are easy on the Koehring gasoline crane with multi-plane mounting. Heavy-duty construction forestalls replacement and adjustments in the field, and when necessary the simplicity of construction, accessibility, and interchangeability of parts, make the work easy. Bulletin Cr-6 issued by the Koehring Co., Milwaukee, Wis., describes this crane completely.

TRACTOR SNOW PLOWS

The exclusive features of the LaPlant-Choate tractor snow plows for removing snow from either city streets or country roads quickly, economically, and efficiently, are told in Catalog M recently issued by the La Plant-Choate Mfg. Co., Cedar Rapids, Iowa.

A NEW FOUR-CYLINDER 10-12-HORSEPOWER ENGINE

The LeRoi Co., Milwaukee, Wis., has recently announced its new Model K light-weight, smooth-running four-cylinder, 10- to 12-horsepower engine. This unit is described in literature which may be secured from the manufacturer.

ALUMINUM RULES IN TENTHS AND HUNDREDTHS OF FEET

Lufkin aluminum rules for civil engineers, surveyors, highway builders, tile layers and others, which are accurate, lightweight, durable, and rough-proof, are described in the literature of the Lufkin Rule Co., Saginaw, Mich.

AN ENGINE THAT DELIVERS FULL POWER

The Beaver engine which is preferred by many contractors and manufacturers for heavy-duty work and which is of the valve-in-the-head design with oversize working parts, is described completely in a bulletin which may be secured from the Beaver Mfg. Co., 50 25th Street, Milwaukee, Wis.

SHORT CUTS TO PROFIT WITH TRACTORS

Caterpillar tractors which supply the power and traction for the many "short cuts" of resourceful earth-movers working in unfavorable weather, always cutting costs and increasing profits, are described in the latest literature of the Caterpillar Tractor Co., San Leandro, Calif.

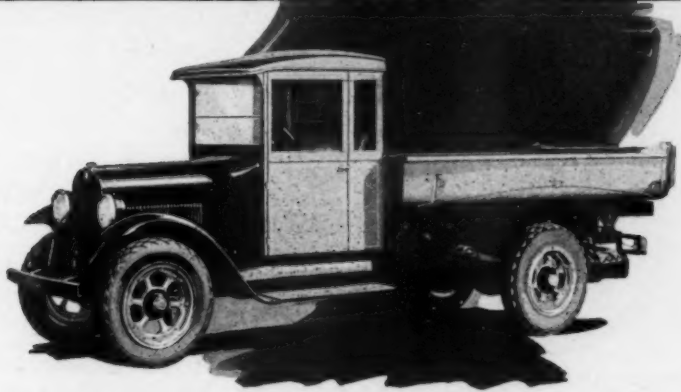
HAND BUSH-HAMMERS

Descriptive matter on hand bush-hammers in a size for every bushing and dressing job on concrete, as well as on the complete Dallett line of pneumatic tools and chisel equipment for bushing concrete and finishing cast stone, including hand points and chisels, hand and striking hammers, drill bits and hollow steels, may be secured from The Dallett Co., Broad and Federal Streets, Philadelphia, Pa.

A LUBRICANT FOR HEAVY-DUTY MACHINERY

Information regarding "D-A" lubricant, which is a densified Pennsylvania oil especially adapted for use on heavy-duty machinery, may be secured on request from the D-A Lubricant Co., Indianapolis, Ind.

A TWO TON TRUCK TRIUMPH



Graham Brothers new Two-Ton Truck has fairly astounded those who have tried it out—and learned its low price!

Simply another reflection of Graham Brothers policy of passing on to the buyer the vast economies of mass production.

Largest exclusive truck manufacturers in the world, Graham Brothers are in a logical position to produce trucks of outstanding performance ability at unapproachably low prices.

They did it with the famous One-Ton G-BOY. And now again with this sturdy Two-Ton.

Graham Brothers Trucks, with Dodge Brothers ¾-Ton Commercial Cars, meet 91% of all hauling requirements.

2-TON CHASSIS \$1445

(Disc Wheels With Dual Rear, Optional)

1½-TON CHASSIS 1245

1-TON CHASSIS (G-BOY) . . . 885

f. o. b. Detroit

GRAHAM BROTHERS

Evansville — DETROIT — Stockton
A DIVISION OF DODGE BROTHERS, INC.
GRAHAM BROTHERS (CANADA) LIMITED—TORONTO, ONTARIO

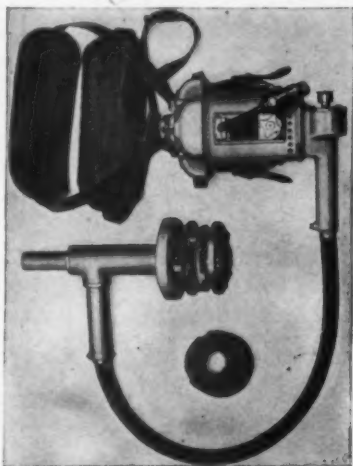
GRAHAM BROTHERS TRUCKS

**SOLD BY DODGE BROTHERS
DEALERS EVERYWHERE**

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

For Fast, Economical Concrete Surfacing—USE

BERG CONCRETE SURFACER AND FINISHER



THE COMPLETE BERG ELECTRIC OUTFIT (Portable)
Universal type motor weighs only 20 lbs. Can be supplied for use on either 110-125 volts or 220-250 volts—Alternating and Direct Current.

The BERG surfaces and finishes concrete construction more quickly, satisfactorily and efficiently than any other method, and secures distinctive results. The cost per square foot of concrete finished is 50 per cent less than when the work is done by hand. One large contractor surfaced and finished a bridge, poured 9 months, previously, at a great saving per square foot. Many other users have established low cost records. Endorsed by leading architects, contractors, engineers.

Write for complete information Today!

THE CONCRETE SURFACING MACHINERY CO.

4669 Spring Grove Ave., Dept. F, Cincinnati, Ohio

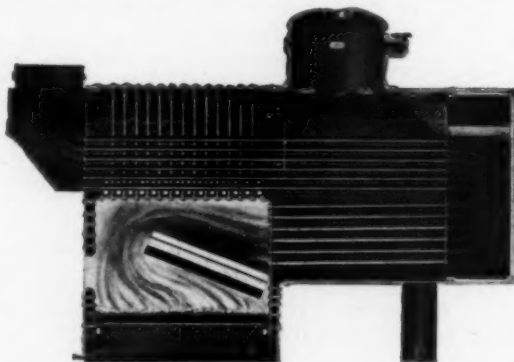


THE BERG PORTABLE AIR-DRIVEN SURFACER AND FINISHER
Simple construction—high power—small air consumption—light weight—low maintenance.

Firebox Return Tubular BOILER

A good "general purpose" type, adaptable for dredges, draglines or stationary power plants.

Fire tile arch improves combustion. Long heat travel increases absorption. Compact, self-contained, efficient.



Sizes from 75 to 200 horsepower

Have you a boiler problem?

JOHNSTON BROS., Inc.

Specializing in Boilers for Contractors' Equipment

FERRYSBURG, MICHIGAN

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



**GMC Big Brute in service of
Thomson Brothers Rock Co.,
Kansas City, Mo.**

A recent purchase of 180 GMC Big Brute Trucks by the Street Department of New York City again demonstrates the great favor with which Big Brute has been received. New York City now has in operation around 900 trucks of which more than a third are GMCs.

GMC Engine:

Unit block and crankcase keep bearings in permanent alignment.
Removable cylinder walls cast from special alloy iron of exceptional wearing qualities.
Piston pins case hardened and lapped.
Rigid crankshaft with ground and polished bearings of large size.
Camshaft with hardened and ground bearings and cams.
Alloy steel valves.
Burnished timing gears.
Positive pressure lubrication to all bearing points.
Air cleaner keeps dirt and grit from engine.
Combination thermo-syphon and pump cooling prevents overheating.
Positive governor prevents operating at injurious speeds.
Engine mounted on rubber cushions.
Multiple dry disk clutch, with very large frictional area.
Transmission with over size alloy steel gears and shafts.
Universal joints, all metal and enclosed.
Rear axle with fewer contact points and held in permanent alignment by radius rods.
Springs of alloy steel.
Steering gear with enclosed ball and socket tie-rod joints.
Brakes: On the 1 and 1½ ton models 4 wheel brakes distribute the friction and also eliminate excessive wear on rear tires. On the 2½ ton and larger models floating cam brakes increase the life of brake linings as they will operate efficiently until entirely worn out.
Over size rear tires are standard equipment on all heavy duty models.

**Only GMC Trucks give you all
these features which insure**

Long Life

Most trucks offer *some* of the features.—but only GMCs give you *all* of them. That is why they are noted for their unusually long life, wherever trucks are used.

For instance: The Hugh McRoberts Coal Co., of Staten Island, New York tells us that their first GMC ran for **11 years** hauling coal and cement blocks over all kinds of roads and then was sold to another concern. Another of their GMCs after **12 years of continuous service over 115,000 miles** is still on the job; while its companion with **9 years of service and more than 75,000 miles** to its credit is still going strong.

If enduring serviceability such as this means anything to you, you should investigate GMC Trucks.



Sold and Serviced Everywhere by Branches, Distributors and Dealers of

**GENERAL MOTORS TRUCK COMPANY
5800-6600 W. Dickens Ave., Chicago, Illinois**

A DIVISION OF YELLOW TRUCK AND COACH MANUFACTURING COMPANY

GMC 1, 1½ and 2½ ton trucks	GMC Big Brute 3½ and 5 ton trucks	GMC Big Brute 4 to 15 ton Tractor Trucks
Yellow Cabs	Yellow Coaches	Yellow-Knight Delivery Trucks
Co. GWT Co-100		Hertz Drivervelf Cars

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

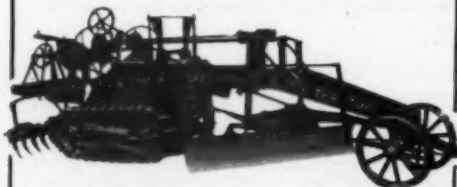


The Barton Portable Pump Reduces the Cost of Pumping

On any job where drainage must be accomplished by mechanical means the Barton Portable Pump does the work quickly and at little expense. An Automatic Primer primes the pump and keeps it primed. These features together with its capacity of 750 gallons per minute make this portable pump practical for general use.

Write for Bulletin.

AMERICAN STEAM PUMP CO.
Battle Creek, Mich.



SPEARWELL "BIG 8" Power Grader-Maintainer

Equipped with Road Wheels for high-speed maintenance or Crawler Tread for heavy-duty grading—furnished for the following Tractors—

Caterpillar 2-Ton, L.H.C. "10-20," John Deere and Fordson.

A complete standard 8-ft. grader unit with 8-ft. blade, front or rear scarifier and with all standard controls including blade reverse, operated from driver's platform in rear.

Write for illustrated literature and prices.

Manufactured by
SPEARS-WELLS MACHINERY CO., Inc.
OAKLAND, CALIF.

Selling Economy First

HERCULES salesmen are instructed to sell economy. The efforts of the Hercules organization are constantly directed toward the development of explosives and methods of blasting that will reduce costs.

In line with this policy we are now recommending the Hercules Extra (Ammonia) Gelatins to many users of gelatin. The prevailing market on raw materials again makes it possible to sell these grades at a lower price than the straight gelatina. The two grades are equal in strength. The Extra Gelatin fumes are as good in all strengths up to and including 60 per cent., and in higher strengths they are better. On most jobs, the same blasting results are obtained with Hercules Extra Gelatins, and their use insures a gratifying saving in cost.

The introduction of Hercules Special No. 3 is another money-saving contribution to the blasting industries. This explosive costs less than other dynamites it often replaces in underground mining. It was developed to effect economies underground comparable with those made possible in surface work with Hercules Special No. 1.

HERCULES POWDER COMPANY
(INCORPORATED)

958 King Street, Wilmington, Delaware

HAND BUSH HAMMERS

*A size for every bushing
and dressing job on
concrete.*

We would like to acquaint you with the most complete line of Pneumatic tools and chisel equipment for bushing concrete and finishing cast stone.

Hand Points and Chisels.
Hand and Striking Hammers.
Drill bits and Hollow Steels.



Descriptive matter awaits your call

THE DALLETT CO.
PHILADELPHIA
NEW YORK CHICAGO

In laying deLavaud Centrifugal pipe, the plain end slides forward, riding on the tapered shoulder inside the bell unit it automatically centers itself.



deLavaud Centrifugal pipe is self-centering—easy to lay

THIS pipe is equipped with bell and plain end joint similar to the type used by the Metropolitan Water Board of London, England. Once in place and caulked in the usual manner, these joints show unusual resistance to blowing out and are most flexible.



Write for literature covering the specifications and use of deLavaud Centrifugal Cast Iron Pipe

United States Cast Iron Pipe and Foundry Company

SALES OFFICES
Philadelphia New York
Chicago San Francisco
Birmingham Pittsburgh
Buffalo Dallas
Cleveland Kansas City
Minneapolis

General Offices,
Burlington, New Jersey

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

SAVE "SHOE-LEATHER" ON YOUR HEAVY MACHINES

HIGHWAY TRAILERS

For the Contractor's Every Need, a Trailer for Each Machine: Shovel, Crane, Roller, Trencher, Paver, Mixer, Compressor; or every Material: Sand, Gravel, Stone, Cement, Lumber, Pipe, Steel. Two, four, six and eight-wheel one-half to fifty tons capacity.

Write for Bulletins
HIGHWAY TRAILER CO.
505 Fulton St.
Edgerton Wisconsin



HIGHWAY TRAILERS ARE BUILT IN THE WORLD'S LARGEST TRAILER PLANT

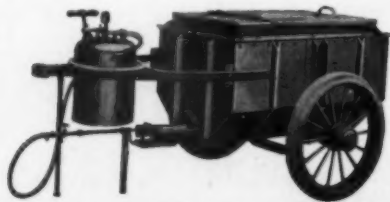
~ for Road
Contractors

CONNER'S OIL BURNING KETTLE - Style J

This kettle is highly recommended for highway maintenance work and for the roofing contractor. Low fuel cost and absolute temperature control are assured by the construc-

tion of the inside tank, which keeps hot and cold materials separate. Many other improvements described in circular.

CONNER & CO., INC.
4000 NORTH SECOND ST.
PHILADELPHIA, PA.



~ for Roofing
Contractors

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

CLIMAX Bulletins

Make It EASY to Order the Power You Need



BULLETIN E

Shows eight models of 4-cylinder and 6-cylinder Portable or Stationary Power Units for connecting by belt to Driven Unit.

CLIMAX Belted Power Units

How to Order When You Get the FREE Bulletins

1st—Order the unit you need by code name shown in bulletin, sending certified belt power of the Unit to be driven.

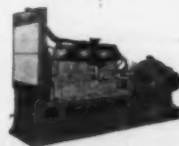
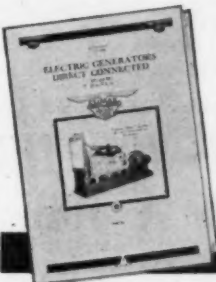
2nd—Tell us whether you will supply the unit to be driven in which case base of Climax Unit will be machined to receive it.

OR

Authorize us to furnish complete driven Unit and it will come forward installed on base.

**No Further Writing
No Further Worry**

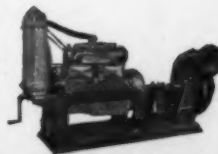
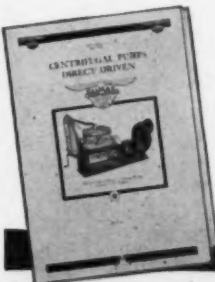
**Write for the Free
Bulletins Today**



BULLETIN F

Shows 4 models of 4-cylinder and 6-cylinder Engines mounted on extended cast iron base for direct connection and unit mounting with Generator.

CLIMAX Direct Connected Generators



BULLETIN G

Shows 4 models of 4-cylinder and 6-cylinder Engines mounted on extended cast iron base for direct connection and unit mounting with any make of Centrifugal Pump.

CLIMAX Direct Connected Pumps

CLIMAX ENGINEERING CO., 1 W. 18th Av., Clinton, Iowa

See any Pump or Generator Company or their Agents or any of the authorized Climax Dealers named below.

Eastern Branch: 20 E. 42nd St., New York, N. Y.
Cleveland Branch: 607 Leader Bldg., Cleveland, O.
Chicago Branch: 2077 Harris Trust Bldg., Chicago
El Paso, Texas: Shoshon & Co., 1316 Second Ave.
Southwestern Branch: P. J. Dancy, Hotel Wells,
Tulsa, Oklahoma
Los Angeles, Calif.: Coast Machinery Corporation,
454-55 E. 3rd St.
San Francisco, Calif.: Coast Machinery Corporation,
555 Folsom St.

New Orleans, La.: Woodward, Wright & Co.
Birmingham, Ala.: Kolar-Gotzinger Engineering
Co., 1208-9 American Trust Bldg.
Boston, Mass.: Rapp-Hochman, 40 Haverhill St.
Denver, Col.: The Hendrie & Balchoff Mfg. & Supply
Co., 1621-39 17th St.
Jackson, Miss.: Anderson Sales & Distributing Co.
Indianapolis, Ind.: Carl Dunning Supply Co., 304
W. Maryland St.

Jacksonville, Fla.: Construction Equipment Co.,
427 East Bay St.
Madison, Wis.: Wisconsin Machine & Foundry Co.
Minneapolis, Minn.: Wm. H. Gierler Co., 619 Wash-
ington Ave. S.
Portland, Ore.: J. L. Lotters Equipment Co., 264
Belmont St.
St. Louis, Mo.: Teller Equipment Co., 2220 Pine St.
Montreal, Que., Can.: Edward G. Dugan, 150
Keefer Bldg.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



THIS CAR DOES THE WORK FASTER— AND FAR CHEAPER

Wherever you have dirt to move, this Koppel Automatic Air Dump Car will prove a revelation in speed and economy—particularly if you are now using the old-fashioned kind that requires pounding and scraping.

See this Koppel Car—you will like it.

RENTAL TERMS IF DESIRED

KOPPEL INDUSTRIAL CAR & EQUIPMENT CO.
KOPPEL PENNA.

SALES OFFICES

Pittsburgh

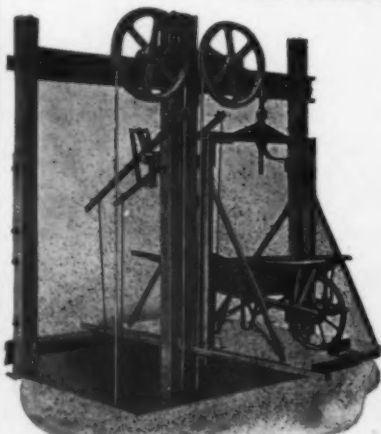
New York

Chicago

San Francisco

A ZETTERLUND GIVES YOU THE "EDGE" IN BIDDING A JOB!

An "Automatic" in Every Sense of the Word.



The above view shows arrangement at discharge level.

The "Edge" is the Saving you make by taking advantage of the economical features that the Zetterlund Automatic Hoist will give you.

The Zetterlund Automatic Hoist saves the wages of an operator. The wheelers operate the Hoist from the discharge level, operating the control lever just as easily and simply as signaling an operator. The Hoist stops automatically at the floor level.

Easy to erect—saves time and energy—economical. Mounted on casters, it is easily and economically moved.

The Zetterlund Automatic Hoist is efficiently pro-

pelled with a Le Roi engine.

It saves fuel through an automatic gas control.

Roller bearings reduce transmission losses to a minimum.

Manufactured by

Zetterlund Hoist & Machine Co.

128-132 Ferry Street

Milwaukee, Wis

Excellent Distributor Territory Open

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Power for Heavy Pulls



The Beaver Delivers It!

Heavy duty power—the kind that's quick to respond and keeps going every minute. That's the Beaver Engine. And exactly why the Beaver is used so frequently on industrial locomotives. It takes good, steep grades with overloads and furnishes smooth running and economical power.

This is but one of the many services where the reliable Beaver Power does much to assure the dependable performance of equipment.

The dependability of the Beaver lies in its "quality" construction. Valve-in-head design, getting the maximum power out

of every explosion. "Over-size" working parts and remarkably vibrationless operation assure a long life of service. The gas consumption is unusually low. Its force-feed lubrication is fool-proof and trustworthy. In every detail the Beaver embodies the best in heavy-duty engine construction.

Beaver Engines furnish dependable power to all types of heavy-duty construction equipment: tractors, pavers, excavators, power shovels, hoists, and the like. When you buy such equipment, look for the Beaver—it is an assurance of reliable performance.

The Beaver is made in sizes ranging from 25- to 150-H.P. Write for bulletin describing Beavers in detail.



BEAVER

Manufacturing Company

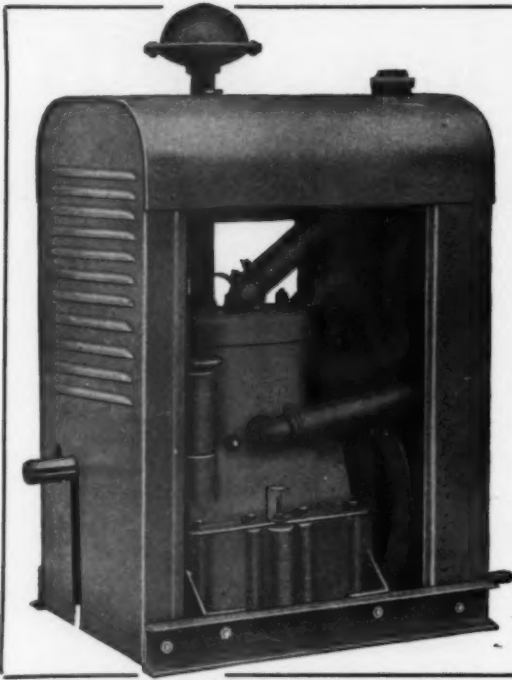
50 - 25th Street

MILWAUKEE

WISCONSIN

FOR STEADY SERVICE
Beaver

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



USE
ALAMO ENGINES
ON
YOUR EQUIPMENT

Alamo Engines develop their full rated Horse Power, and 10 per cent overload.

Any equipment manufacturer will be glad to furnish you an Alamo Driven Outfit.

Write for folder

THE ALAMO ENGINE CO.
HILLSDALE MICH., U. S. A.

Builders of

Vertical and Horizontal Engines, in sizes from 1½ to 15 H.P., inclusive.

Everywhere!



A hoist for every make, model and capacity of motor truck.

Sold and serviced everywhere.

The whole story of construction and method of operation is told in our illustrated folder, in colors. Mailed upon request.

MUNICIPAL Engineers and Contractors everywhere know the intrinsic value of Wood performance and dependable service.

With ample power to raise any load, Wood Hydraulic Hoists are the Recognized Standard the World over, wherever Loads are Dumped or Roads are Built.

WOOD
HOISTS-BODIES

Wood Hydraulic Hoist & Body Company
World's Largest Builder of Hydraulic Hoists and Steel Dump Bodies
7938 Riopelle Street Detroit, Michigan

CLYDE

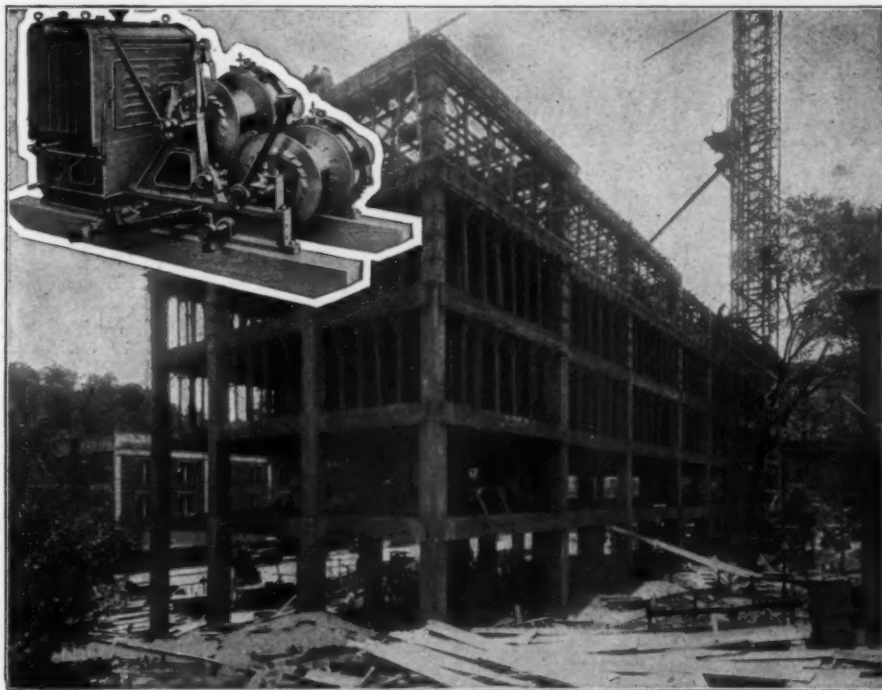
Standard Hoists and Derricks For the General Contractor

STEAM · ELECTRIC · GASOLINE · BELT

The addition to the Majestic Hotel, Hot Springs, Ark., built by the Herman & McCain Construction Co., is shown below. A standard Clyde two-drum gasoline hoist handled all materials in a manner entirely satisfactory to the contractors.

The Clyde Line also includes steam, electric and belt hoists, built in a range of sizes to meet every requirement. A request will bring you details about any unit.

You'll Take Pride In Your Clyde!



CLYDE IRON WORKS SALES COMPANY

Sole Distributors for CLYDE IRON WORKS, Duluth, U. S. A.

Stocks Carried in the Following Warehouses:

NEW ORLEANS
309 Magazine St.

NEW YORK CITY
E. 136 St. and Locust Ave.

PORTLAND, ORE.
555 Thurman St.

SEATTLE
3410 First Ave. So.

Branch Offices:

CHICAGO
11 So. La Salle St.

CINCINNATI
1913 Union Cent. Bldg.

MEMPHIS
69 Union Ave.

JACKSONVILLE
43-45 W. Forsyth St.

SAN FRANCISCO
737 Monadnock Bldg.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



The Plaster Mix

Ever pick up W C X, Detroit's Book-Cadillac Hotel radio station? Fine music!

This picture shows the basement of that hotel under construction. The man at the right is Thomas King, the plaster contractor.

The Mixer? A Blystone, of course. Mr. King had two on this job. Because of Blystone Guarantees of Thoroness, Mr. King tells us he put 57,000 sacks of compound and 5,000 yards of sand through in 120 days. Kept 254 plasterers spreading smoothly mixed plaster. No droppings to count.

Just ask us more about this.

BLYSTONE MFG. COMPANY
926-C Street Cambridge Springs, Pa.

BLYSTONE

The Pioneer of 1900



Today—Known
the World Over
As a Sound
Investment



MACK TRUCKS, INC.
INTERNATIONAL MOTOR COMPANY
25 Broadway • New York City

One hundred and nine direct MACK factory branches operate under the titles of: "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION," "MACK TRUCK CORPORATION," "MACK MOTOR TRUCK COMPANY," and "MACK TRUCKS OF CANADA, LTD."

TRUCKS • • • BUSES
FIRE APPARATUS • RAIL CARS



Long After the First Season!

90¢

— that's the actual averaged yearly repair part cost per unit of all Le Roi engines in concrete mixer service. This figure is authentic and covers a four year period.

THE initial price and the first season's performance do not decide engine "economy" and establish its cost. That's merely the starting point. The true worth is measured by years of service — its average "all-time" operating cost.

Therefore its not surprising that Le Roi so highly "towers" its field. Actual performance and low repair cost charts bear witness to Le Roi's enviable position.

Time-wise contractors know that the engine that shows uncommonly low up-keep costs is *dependable* — is not guilty of costly shutdowns — must be *carefully and soundly built* — and stays *active longer*. They get all this and more from the Le Roi.

Look to the Le Roi for dependable power and know it by what it does.

Le Roi Company, Milwaukee

LE ROI ENGINES
for dependable power!



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



**S
C
H
R
A
M
M,
I
N
C.**



SHOWING SEVERAL OF THE TEN "SCHRAMM" 100 CU. FT. TRACTOR DRIVEN COMPRESSORS OWNED BY THE PENNA. STATE HIGHWAY DEPARTMENT. ON ROAD WORK.

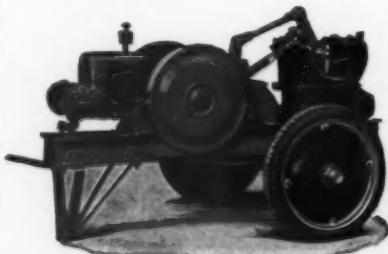


THESE OUTFITS HAVE BEEN WORKING CONSISTENTLY FOR TWENTY EIGHT MONTHS DURING WHICH PERIOD THE STATE HIGHWAY DEPARTMENT SPENT ONLY \$2285 FOR REPAIRS.

SCHRAMM, Inc. *Manufacturers of* West Chester, Pa.
Offices and Representatives in all Principal Cities

SCHRAMM, Inc.

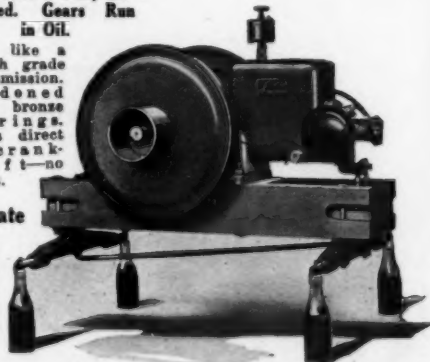
LAUSON "Quality" Pumping Units and Engines



Furnished complete with make of pump desired, or without pump but with connections for installing leading makes. Powered with "Lauson" 2-h.p. Engine for 3-in. pump; 2½-h.p. for 4-in.; or electric motor.

The Jack is Fully Enclosed. Gears Run in Oil.

Built like a high grade transmission. Hardened gears, bronze bearings. Drives direct from crankshaft—no chains.



Here's How Smoothly "Lauson" Engines Operate

This was a regular out-of-stock engine shown at State Fairs. Running hit and miss, day in and day out, it showed such complete freedom from vibration that the pop in the bottles scarcely registered a tremor.

They're Built Right—Throughout.

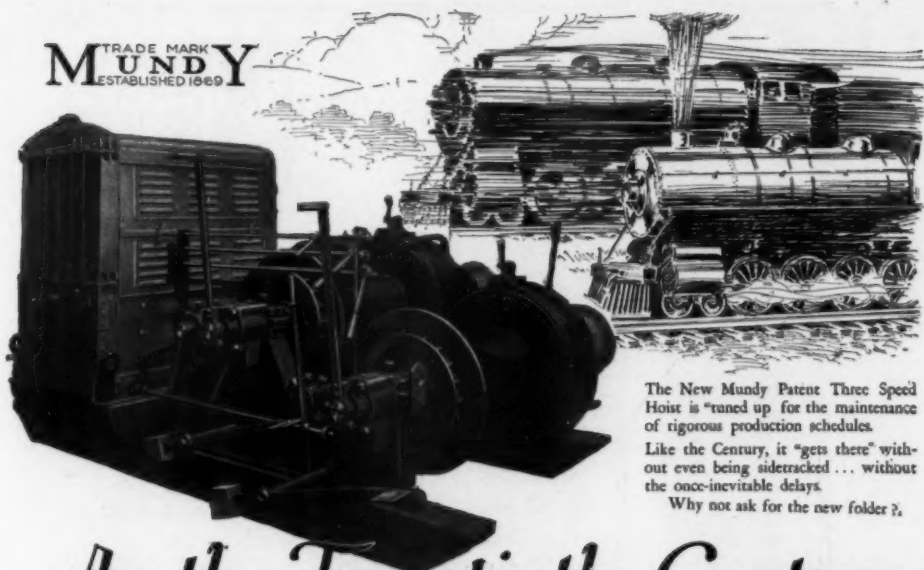
Write for Complete Information on Full Line.

We also manufacture Concrete Mixers and Contractors' Road Tractors.

THE JOHN LAUSON MFG. CO., 11 Jackson St., New Holstein, Wis.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

TRADE MARK
MUNDY
ESTABLISHED 1869



The New Mundy Patent Three Speed Hoist is "tuned up" for the maintenance of rigorous production schedules.

Like the Century, it "gets there" without even being sidetracked... without the once-inevitable delays.

Why not ask for the new folder?

As the Twentieth Century passes a freight train...

To Equipment Distributors

The New Patent Three-Speed Hoist is fully protected by patents in the United States and Canada.

Some open exclusive sales territory is now available.

THE Century thunders down the line... passing in a second the freight which may have been sidetracked twenty minutes. The Century gets there... without costly "time-out"... without being sidetracked.

The New Mundy... the "Twentieth Century" among hoists... "gets there" in like manner. While the old fashioned hoist is sidetracked for an hour, while the reaving is changed... the New Mundy Patent Three Speed Hoist is on its way again in a short ten seconds... after a

complete change of speed and line pull!

Three Speeds... sliding gear transmission... that's what makes a "freight" of the old hoist... and a "flyer" of this one. Let the new Mundy transform your hoisting schedule from slow freight to fast express!

The Mundy Sales Corporation

Distributors for the J. S. Mundy Hoisting Engine Co.

30 Church St., New York

Agents in Principal Cities

MUNDY HOISTS

THE HOIST WITH THE ASBESTALL FRICTIONS

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



TWIN DISC CLUTCHES

SUDDEN, heavy loads at the work contact point are turned into gradual, easily handled loads at the engine by the action of the Twin Disc clutch. The life of the power plant is prolonged, depreciation and repair expenses are reduced, while the output of the machine is actually increased.

REPAIR PARTS STATIONS

San Francisco—F. Somers Peterson Co., 57 California St.
Los Angeles—Coast Machinery Corporation, 406 E. Third St.
Chicago—Motive Parts Co. of America, Inc., 2419 Indiana Ave.
Indianapolis—Motive Parts Co. of America, Inc., 531 N. Capitol Ave.
Des Moines—Motive Parts Co. of America, Inc., 1204 W. Grand Ave.
Detroit—Whitney Brothers, 6464 Epworth Blvd.
New York City—R. George & Co., Broome & Wooster Sts.
Raleigh, N. C.—Motor & Equipment Co., 215 E. Davis St.
Cincinnati—Motive Parts Co. of America, Inc., 228 E. Eighth St.
Cleveland—James R. Howell, 6715 Quimby Ave.
Tulsa, Okla.—Buda Engine Service Co. of Tulsa, Inc.

TWIN DISC CLUTCH COMPANY
RACINE WISCONSIN

40 more

A Southeastern state was using 20 A. W. Graders, bought some time ago, so the second order of 40 was undoubtedly placed because of proven results and work accomplished as reported and recorded.

28 Aurora Specials and 12 Austin Mammoth Juniors

Branch offices and warehouses in all large cities.

Catalog on request.

THE AUSTIN-WESTERN ROAD MACHINERY CO.

400 North Michigan Ave.

Chicago, Illinois



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

RESPONSIVE POWER FOR THE DAY'S WORK

The power shovel or the industrial crane—each requires a sure responsive power plant to do the day's work.

The contractor and the manufacturer have found that the flexible, dependable power of Continental Motors is a great aid to production and profits. Results have shown that Continental Motors give unusual service at low cost over long periods of time.

Put Your Power Problems Up to "Power Headquarters"

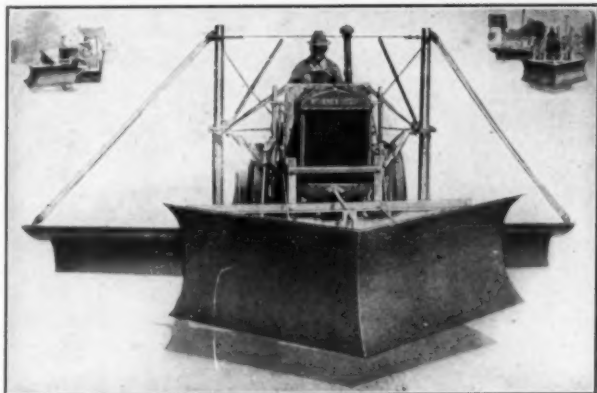
CONTINENTAL MOTORS CORPORATION

Offices: Detroit, Mich., U. S. A. Factories: Detroit and Muskegon
The Largest Exclusive Motor Manufacturer in the World



Dependable Power  for Every Purpose

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



**LIGHT yet POWERFUL
EFFICIENT yet INEXPENSIVE**

*—that tells the story
of the*

**ACME
SNOW PLOW
ATTACHMENT**

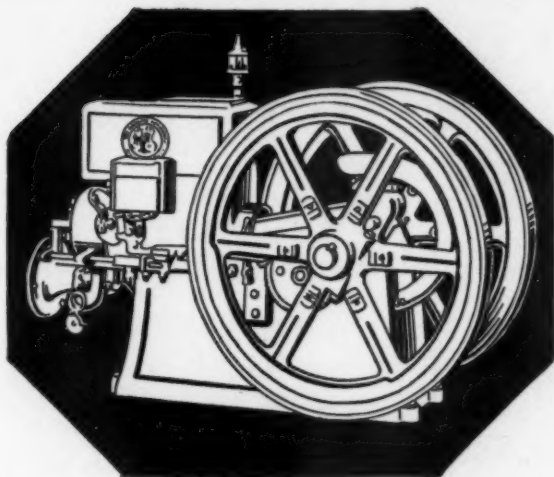
For particulars see Bulletin 126

**The ACME ROAD MACHINERY CO.
FRANKFORT, N. Y.**



ACME Road Machinery **ACME**
for Satisfaction

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



Weather-Proof! Fool-Proof! Time-Proof!

Not only do Hercules Engines deliver their full rated horse-power, but they do so constantly—under all extremes of weather and with a fine disregard for the passing of years.

Manufacturers of gravel screens, concrete mixers, compressors, portable saw rigs, pumping units, paint and orchard sprayers, hoists and conveyors, etc., have learned to increase the efficiency and value of their products by employing this dependable power.

If you need an engine that operates as efficiently in the hands of an unskilled laborer as it does for a master mechanic—or if the time has come for you to replace unsatisfactory equipment of a type mentioned here—write us for helpful information. We will put you in touch with manufacturers whose products you can buy with perfect safety.

THE HERCULES CORPORATION, EVANSVILLE, IND., U. S. A.
Established 1894

HERCULES ENGINES



HERCULES features

Wico high-tension magneto—maleable iron cam gear—interchangeable hard bearings—cylinder block and base separate—full height engine base—.45 carbon steel crankshaft and connecting rods, double heat-treated—automatic governor—separate governor and cam gear brackets—steel governor pinion—balanced rotating parts—interchangeable repair parts—hot spark—immediate starting—twice tested before final okeh.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

LITTLEFORD

A TYPE FOR EVERY PURPOSE
A CAPACITY FOR EVERY NEED

We manufacture the following type and capacities of Tar and Asphalt Heaters:

- "Maintenance" No. 69—60-110-165 gals.
- "Midget Maintenance" No. 69—25 gals.
- "Contractors' Special" No. 48—300-550 gallons.
- "Oil-Burning" No. 84-W—50-75-100 gals.
- "Patrol" No. 68—10 gallons.

*Write for detailed
description and prices.*

LITTLEFORD BROS.

485 EAST PEARL ST.

CINCINNATI

OHIO

Tar and Asphalt
HEATERS



BAKER MANEY Self Loading Scrapers

1 1/4- and 3/4-Yard Tractor-Drawn

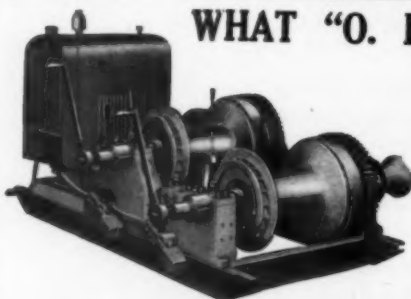
Make your dirt moving pay you bigger profits by using only two or three men where you used a big gang before. Baker Maney Self Loading Scrapers, in trains of 2 to 6, save unnecessary labor costs.

Send for Catalog 209A

The Baker Mfg. Co.

585 Stanford Ave.

Springfield, Ill.



WHAT "O. K." MEANS IN A HOIST---

The name "O. K." on a Hoist signifies all that is latest and best in hoisting efficiency and economy.

Write us for description.—There is an O. K. Hoist for every hoisting job—single or double or triple drums, reversible or non-reversible, with or without boom swinger, in sizes from 4 to 165 h.p. in gasoline hoists, and 5 to 150 h.p. in electric hoists.

Also manufacturers of O. K. Compressors: 118, 160, 265 cu. ft. piston displacement; steel wheels, rubber tires, and spring mountings.

O. K. CLUTCH & MACHINERY CO.

COLUMBIA

PENNA.



(Reg. U. S. Pat. Off., Canada and Other Countries)

EAGLE "MIKADO" PENCIL

No. 174

KNOWN THE WORLD OVER
The **YELLOW Pencil** with
the **RED Band**.



Made by the
Largest Pencil Factory
in the World

Used by Leading Architects, Engineers, and
Offices where only the best materials are used.

THE EAGLE PENCIL CO.

703 East 13th Street

New York City

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

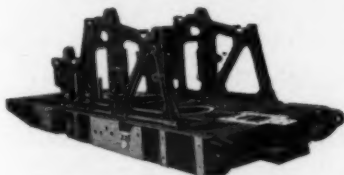
New and Better —

1927 P & H Excavators

Now Ready



Car body for the new P & H—A
UNIT STEEL CASTING



Revolving frame and side stands for
the new P & H—UNIT STEEL
CASTINGS

No Excavator but a P & H
has all these Features

Unit Cast Steel Construction
Complete unit castings give permanency.

All Fits Machined to Close Limits

More work for us—but longer service for user.

Shortest Tail Swing

Important in tight places, and for overcasting—get close to work.

A Crowding Motion

that is exclusively P. & H. Independent of hoisting motion—powerful crowd beyond boom point—cut to 1 inch of grade.

Two-Speed Traction

Saves time—goes anywhere.

A Model for Every Job

$\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ cu. yds.

Built for the job, not stretched to meet it.

Big Capacity

Extremely fast line and swing speeds. Large motors.

P & H $1\frac{1}{4}$ yd. Excavator

is largest of its size that ships on flat car without dismantling. Saves time and money.

Truss Boom on Dragline and Crane

Less dead weight to be lifted—greater strength.

Built on a Foundation of Unit Cast Steel

Incorporated in these advanced models is the experience gained during 42 years of manufacturing material handling equipment—14 years of gasoline excavator building.

P & H Excavators have always been long lived. With the new unit cast steel construction they will last still longer. We do not hesitate to say that they are the longest lived excavators built.

HARNISCHFEGGER CORPORATION

Successors to

PAWLING & HARNISCHFEGGER CO.

Established in 1884

3819 National Avenue, Milwaukee, Wis.

New York
Chicago
Pittsburgh

Jacksonville
Philadelphia
Kansas City

Memphis
Dallas
Detroit

Charlotte
Birmingham
Portland

Indianapolis
San Francisco
Los Angeles

Seattle
Atlanta
Tampa
Miami

Warehouses and Service Stations:

Philadelphia

Memphis

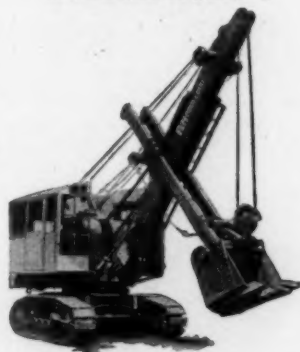
San Francisco

Los Angeles

Jacksonville

Seattle

The 1927 P & H Excavator—
Model 600—"all steel" construction from the ground up



P & H EXCAVATORS

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



Heil Model 11 Steel Dump Body fitted with swinging partitions and mounted with a No. 5 Heil Hoist on a $3\frac{1}{2}$ -ton truck.

HEIL Dump Bodies and Hoists

If you are looking for correct design and thorough construction in your motor truck dumping equipment you will find what you want in HEIL steel dump bodies and hoists. The dump body shown above is especially adapted for "batch" hauling. The tailgate is fitted with a chain device for spreading the load.

A Heil Hoist is responsible for the big dumping angle shown above. Find out more about Heil Hoists and how you can save money by using them.

Send for the Heil Catalog and Pricelist.

Bulletin 160 will be sent on your request.

THE HEIL CO.

1243 - 26th Ave. . . . Milwaukee, Wisconsin

Factory Branches:

Chicago, Philadelphia, Boston, New York

One of our Twenty-five Distributors is near you.

Mfrs. of Steel Dump Bodies, Hoists, and Tanks for Motor Trucks.



This is the new model 105 Heil Dual Pivot Gravity Dump Body for mounting on the Ford and other light weight trucks. It has a capacity of 1 cu. yd. which can be readily increased to $1\frac{1}{2}$ cu. yds. carried in stock ready for immediate delivery.

Send for Bulletin 162.

the New BELLE CITY BUILT MODELE

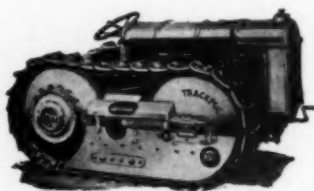
Full Timken Roller Bearing Equipment.

Driven and Steered through Multiple Disc Clutches running in oil and completely enclosed.

Automatic Spring Release and Front Spring suspension absorbs shocks and strains and prevents injury to working parts.

All working parts and adjustments easily accessible.

Increased Fordson tractive power under all conditions of soil and weather.



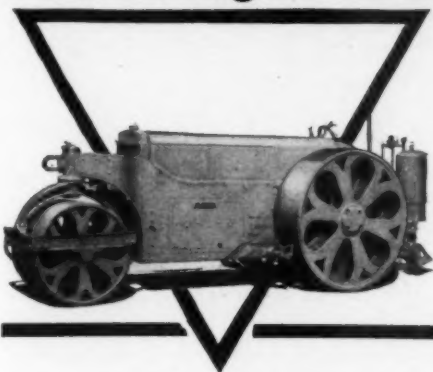
Ask your Ford Dealer or write

Belle City Manufacturing Company
Racine, Wisconsin
Dept. DJ-10



Always Ready To Go

—more dependable than steam!



More dependable and less trouble—That's Huber Road Roller Economy.

The Huber 4-Cylinder Motor Roller effects great savings in road construction and maintenance. Its speed and absolute dependability enable contractors to get out twice the amount of work in the same period of time. The result can be nothing but increased profits.

Compare the Huber with any other roller—steam or gas—and by merit alone, you'll select Huber.

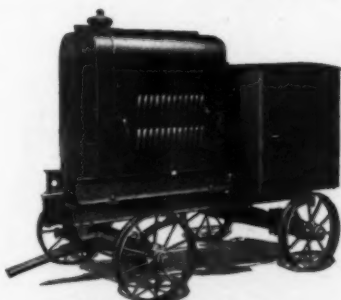
Write for interesting books today.

THE HUBER MANUFACTURING CO.

315 E. Center St.

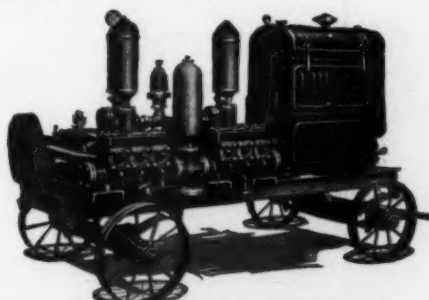
Marion, O.

DEPENDABLE PUMP UNITS for CONTRACTORS



TRIPLEX PUMP UNITS

60, 70 and 80 gallons per minute high pressure pumps for the road builder.



SEXTUPLE PUMP UNITS

200 and 300 gallons per minute pumps for pile jacking.

— Let us send you descriptive bulletin 26-FC —

DOMESTIC ENGINE & PUMP CO.

SHIPPENSBURG, PENNA.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



Worked Six Months —No Wear—

After six months' running, Lafayette National Park engineers overhauled their Sullivan WK-314 portable air compressor to check up on wear. *There wasn't any: they couldn't take a shim out of the crank pin or main bearings.*

"Balanced-V" cylinders, quiet operation and positive controlled lubrication are bound to make a compressor live longer.—Get a Sullivan.

Write for free booklet 3983-D.

SULLIVAN
MACHINERY COMPANY
142 S. Mich. Ave., Chicago

Branches and Dealers in all principal cities



"Clings to Metal"

A Densified Pennsylvania Oil

FOR

Displacing old-fashioned and inefficient cup greases and gear compounds.

"D-A" Lubricant

is especially adapted for use on heavy duty machinery and is sold by distributors of this type of equipment everywhere.

D-A LUBRICANT CO., Inc.

Plant and Home Office:

INDIANAPOLIS - INDIANA

THE MONEY-MAKER!



Type F2—Wheel Mounted
Type Q3—Crawler Mounted

NELSON FORDSON LOADER

Capacity 100 cu. yds. an hour
Interchangeable Mountings

The Biggest Dollar's Worth
for Stock-piles, Batching or Grading

N. P. NELSON IRON WORKS, Inc.

Allwood, Passaic, N. J.



CLAMPS

that are strong—
that can be used over and over
again—
that are easy to place on any
column—
that are easy to take off any
column—
that save labor—
that are easy to store—
that fit any shape column—

THE W. A. K.

Column Clamps
Many Ohio contractors are now cutting costs by the use of these clamps.

W. A. KUHLMAN & CO.
TOLEDO OHIO
DISTRIBUTORS IN ALL LEADING CITIES



3 SIZES

BATES 25
BATES 40
BATES 70

BATES Tractors are more powerful and built heavier than is usual. They work with a surplus of power that makes the job progress swiftly and finish with a profit. Low up-keep cost and surplus power are outstanding BATES features.

Write for New Catalog

BATES MANUFACTURING COMPANY,

Joliet, Illinois, U. S. A.

Established 43 years ago

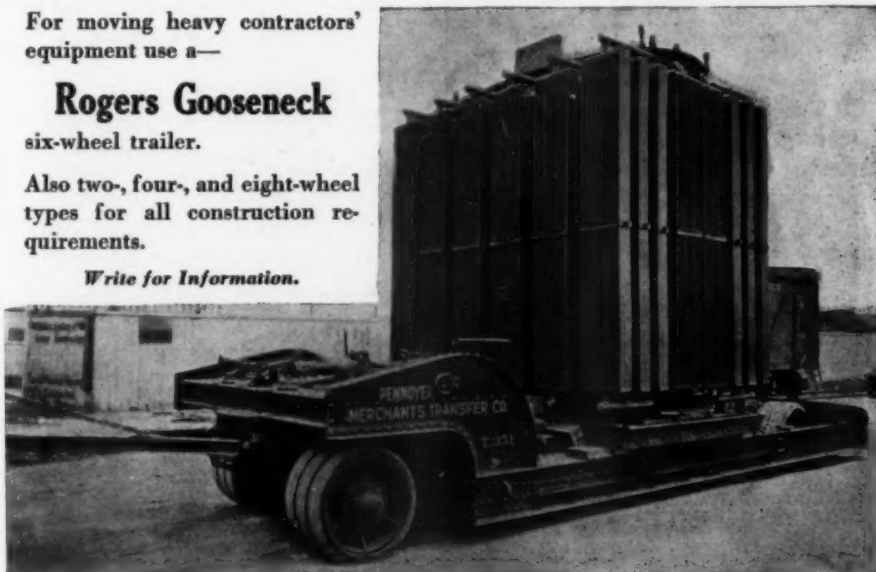
For moving heavy contractors' equipment use a—

Rogers Gooseneck

six-wheel trailer.

Also two-, four-, and eight-wheel types for all construction requirements.

Write for Information.



ROGERS BROTHERS CORPORATION,

Albion, Penn.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



THESE TOOLS ARE NOT ORPHANS

Tools and equipment, like children and dogs, wander away. Children and dogs come back, but tools and equipment don't. Once away from the fold, the wolves devour them. You write them off the books and buy more.

And when tools and equipment run away, they take Profit with them. But you can keep them home. Brand them.

The EVERHOT Branding Torch permanently marks your tools and your equipment.

No more orphans of the storm. Tools branded the EVERHOT Way are safe from the hands of pilferers.

Brands or solders continuously. Burns gasoline.

*Write for low prices
and descriptive circular.*

EVERHOT
America's Brand Makers
MANUFACTURING CO. MAYWOOD, ILLINOIS

FOR HANDLING CRUSHED STONE or SAND and GRAVEL



From cars to trucks the **RELIANCE PORTABLE CAR UNLOADER** will save more than its cost in one season.

Catalog and Price List on Request.

UNIVERSAL ROAD MACHINERY CO.
KINGSTON, N. Y.

New York Office, 114 Liberty St.

Boston Office, 141 Milk St.



Jackson Concrete Carts

have bodies with round bottoms, and are easy to dump. Durably constructed in every detail.

*Ask for Catalog 12-C
(Beautifully illustrated)*

JACKSON MANUFACTURING CO.

Manufacturers of

**Barrows, Concrete Carts, Drag
Scrapers and Mortar Pans**

HARRISBURG, PA.

IT'S A BURCH

Burch Conveyors really "convey" at a speed which insures profits by lessening the cost of material handling.

Contractors, keep your trucks moving with the help of this efficient machine.



*Ask us also for information on the Burch
Unloaders and Spreaders.*

The Burch Plow Works Co.
Dept. MA **Crestline, Ohio**

Schaefer CLEVELAND



LOADING



HAULING

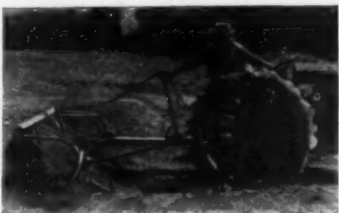
Schaefer Automatic One-Man Tractor Scraper

ON THE MARKET SINCE 1921

All operations by tractor power.
Easy control from driver's seat while tractor is in motion.

Made in four sizes: scraper width 4, 5, 6 and 7 ft. Write for Circular S-26-269.

The Gustav Schaefer Wagon Co.
4180 LORAIN AVE., CLEVELAND, O.
U. S. A.

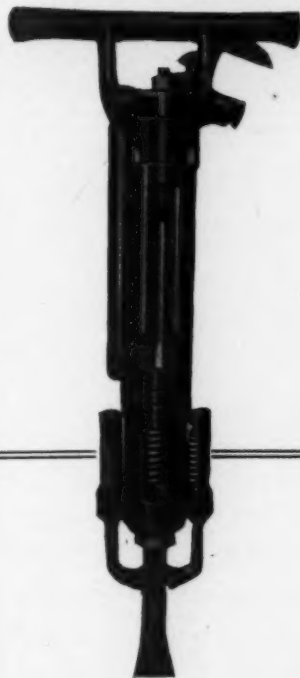


DUMPING AND SPREADING



RETURNING FOR LOAD

HARDSOCC PAVEMENT BREAKER



CUTS THE COST
60-75%

More work per man—
Low upkeep cost—
Extra long stroke and
hard-hitting ability—

*Our circular will
tell you why.*

**HARDSOCC
WONDER DRILL CO.**

OTTUMWA

IOWA



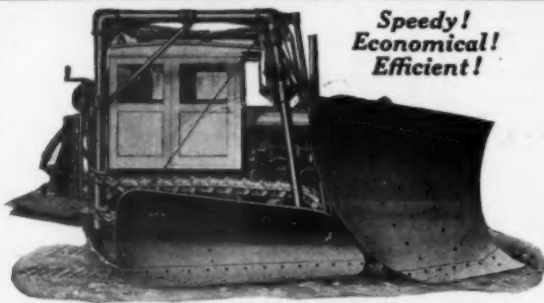
Carbic products stocked in 75 cities

CARBIC PORTABLE FLARE LIGHTS

Carbic Lights are the simplest, safest portable lights ever produced. They burn Carbic Cakes, a convenient form of high grade calcium carbide.

Write for further information

CARBIC MANUFACTURING CO.
DULUTH NEW YORK CHICAGO



*Speedy!
Economical!
Efficient!*

LA PLANT-CHOATE TRACTOR SNOW PLOWS

For removing snow from city streets and country roads—quickly, economically, and efficiently! Many exclusive features make LaPlant-Choate Tractor Snow Plows the leaders in snow removal equipment. We also make a complete line of blade and "V" type plows to fit all makes of motor trucks. Write for Catalog M and name of nearest Distributor.

LA PLANT-CHOATE MFG. CO.
Cedar Rapids, Iowa

"EZ" STEEL ROAD FORMS "EZ" STEEL BUILDING FORMS

*A Hotchkiss Development
for the*

Construction of Concrete Roads, Walks, Curbs, and Gutters, Drives, Building Foundations, etc., and All Sizes of Each.

Send for Descriptive Pamphlets

HOTCHKISS STEEL PRODUCTS CO.
Binghamton, N. Y.

PILE HAMMERS CONCRETE BUCKETS

It will pay you to look up the UNION line. Write for Bulletin 63, then keep the pages handy for reference by binding them in with the *Associated Equipment Distributors Catalog*.

UNION equipment for construction work also includes Grout Mixers and Ejectors, Cableway Skips, Tunnel Shields, Air Locks, etc. (All described in Bulletin 63.)

UNION IRON WORKS
Builders of Double Acting Pile Hammers since 1906
West Shore Siding Hoboken, N. J.

Model 6630, Built Especially for Ford One-Ton Truck

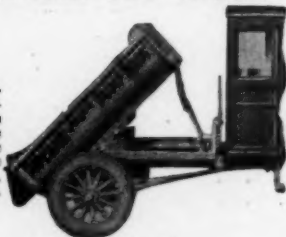
Superior Automatic Dump Body GENERAL SPECIFICATIONS

Capacity (water level).....	13½ cu. yds.
Capacity gained by side boards.....	¾ cu. yd.
Length.....	68 Inches
Width.....	48 Inches
Depth.....	16¾ Inches
Loading Height from ground.....	52 Inches
Weight (complete to mount).....	758 lbs.
Ground clearance in dumping position, 70 in.	

Write Us for Prices

FACTORY & SERVICE STATION

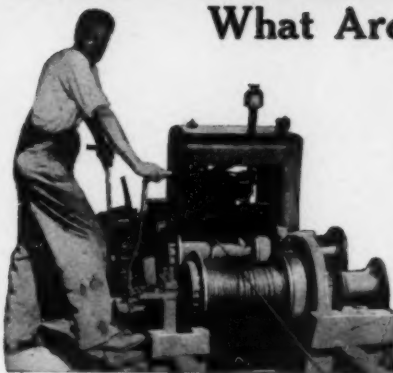
SUPERIOR BODY CORPORATION, Marion, Indiana



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

MEAD-MORRISON

What Are You Looking For?



Handi-Hoist Features

Cut Gears
Asbestos-Lined Frictions and Brakes
Machined and Bronze Bushed Drums
Second unit easily operated
Gasoline or electric motor

SPEED?

Handi-Hoists give you a rope pull of 3500 lbs. at 175 ft. per minute. Handi-Hoists owned by the St. Clair Supply Co., Greensburg, Pennsylvania, operate skip car unloaders at a speed that unloads two 55-ton cars of gravel in 43 minutes.

POWER?

Handi-Hoists operate light derricks, pile drivers, mast hoist plants and scraper buckets. W. A. Dutton, Winnipeg contractor, drove 20 to 40 ft. piles with a 2200-lb. hammer operated by a Mead-Morrison Handi-Hoist.

ECONOMY?

On Dutton's job the average number of piles driven was 22 per day. Average gas consumption was only $5\frac{1}{4}$ gallons!

PORTABILITY?

The Handi-Hoist, single-drum or double-drum, weighs from 1500 to 3200 lbs. Easily spiked about on the job and moved to new locations by truck. Martin & Breen, Inc., Philadelphia contractors, find that their Handi-Hoist not only operates their light derricks efficiently but that the latter outfit can be delivered on the job, erected, taken down and returned to the yard for one-third the cost of handling the usual heavier steam-operated outfit.

MEAD-MORRISON MFG. CO.

1048 PRESCOTT ST. BOSTON, MASS.

Canadian Factory: Welland, Ontario

Branch Offices: New York, Montreal, Chicago

HOISTING - HAULING - HANDLING

BUFFALO-SPRINGFIELD ROLLERS



All Types and Sizes
With or without Scarifier
attachment.

Helps you finish the job
on time.



Send for catalog A for complete information.

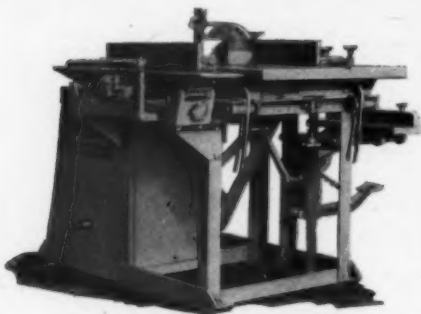


The Buffalo Springfield Roller Co.
Springfield, Ohio.



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

C. H. & E. SAW RIGS



A portable saw rig on the job saves its cost in thirty days' continuous service. It gives you your own shop right on the job. Makes for quick work at less cost. We manufacture six different sizes of Saw Rigs, also Diaphragm, Piston, Centrifugal and Triplex Pumps, nine sizes of Builders' Hoists, Material Elevators and Mortar Mixers.

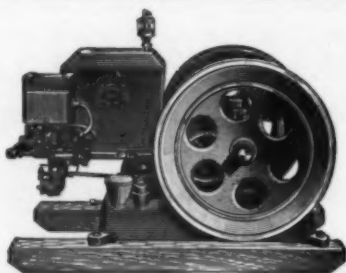
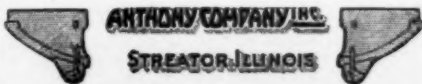
Write for catalog.

C. H. & E. Manufacturing Co., Inc.
500 Mineral St. Milwaukee, Wis.



SUCCESSFUL CONTRACTORS INSIST ON ANTHONY DUMP BODIES

Count the Trade-Marks on the Road



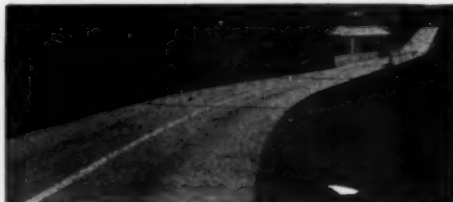
STOVER ENGINES

**Reliable Power Plants
for Industrial Machinery**

Contractors agree dependable, economical power is vital to the satisfactory operation of industrial machinery. More and more manufacturers specify Stover engines, because of their proven superiority. The above illustration is of 2 H.P. size. All sizes, Wico Magneto equipped.

35 Years of Engine Building Experience
For almost half a century Stover engines have been famous for their in-built quality. Users testify they are better today than ever before. Service stations located everywhere. Write us for FREE literature!

STOVER MFG. & ENGINE CO.
15 Lake Street FREEPORT, ILL.



Like a "Buffer State"

SEAL TIGHT

THE PERFECTED JOINT

If no "Buffer State" is left between two adjacent slabs of concrete, expansion will cause a destructive "war" between them.

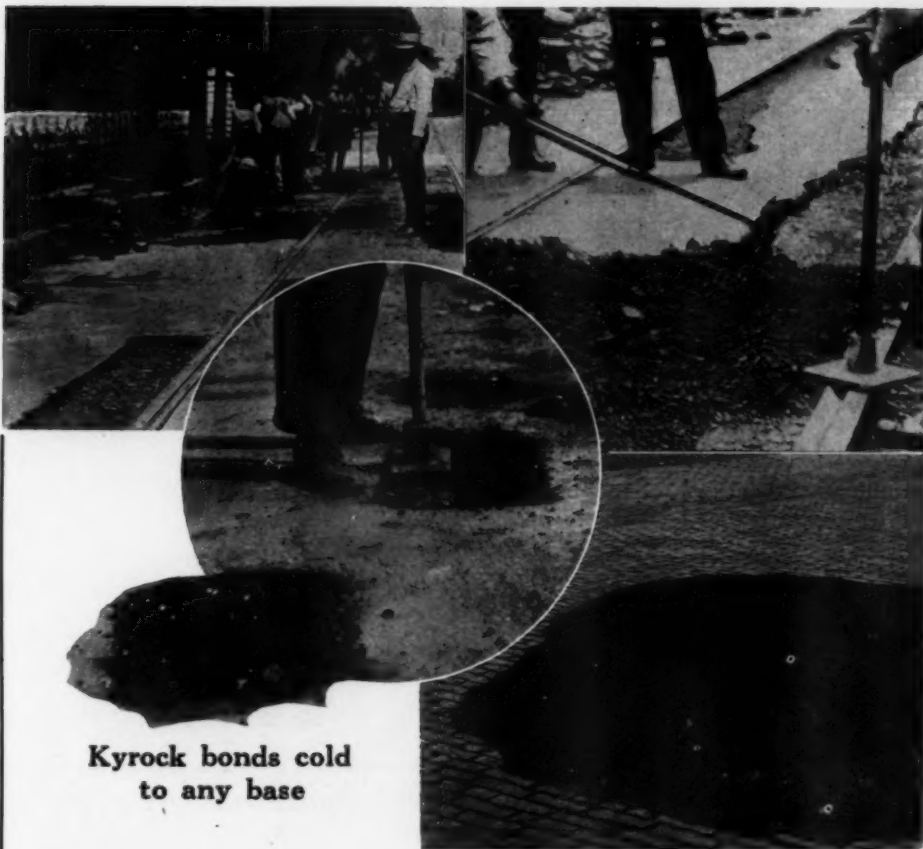
Sealtight is the "Buffer State" which not only prevents two slabs from going to "war" but also protects them from attacks by weather, water, etc.

Sealtight is a manufactured, ready-to-install joint, made of a mixture of pure blown asphalt and a long flexible vegetable fibre. Sealtight is easy to install in any weather—will not shatter in winter nor "run" in summer. The fibre filler gives Sealtight sufficient body to withstand the shocks of traffic, yet does not prevent the asphalt from sealing the joint perfectly.

Write

W. R. MEADOWS, Inc.
Elgin, Illinois

Make the Road Right — Use "Seal Tight"



**Kyrock bonds cold
to any base**

KYROCK *Simplifies Maintenance*

Kyrock is laid cold without special equipment. Stored in the open without damage. Shovel it on, rake to grade, cold tamp or roll, and the job is done. Investigate Kyrock.

for Sheet Asphalt, Bituminous Macadam, Worn Brick, Granite, Concrete. Write for details.

KENTUCKY ROCK ASPHALT CO.

INCORPORATED

LOUISVILLE, KY.

Kyrock
The **Perfect**
Pavement



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



THIS PUMP EXCELS

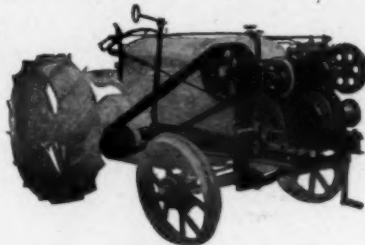
**Capacity
in Suction Lift
Sturdy Construction**

Humphryes High Capacity Diaphragm Pumps are all that the name implies. Sturdily built power pumps, these units are designed to give uninterrupted heavy-duty service. Write for complete details.

The Humphryes Mfg. Company
Mansfield, Ohio

Representatives in principal cities

The PIONEER Porta-Hoist



MOUNTED on the front of a Fordson Tractor. Single or double drum; reversing or non-reversing. Mean cable speed with standard drive 140 feet per minute. Capacity on single line is 3,500 pounds for continuous operation.

Write for more information.

PIONEER TRACTORS, Inc.
WINONA, MINN.

HAISS PORTABLE CONVEYORS

**For Loading
Crushed Stone,
Gravel, Sand,
Coal, etc.**



Troughing and Flat
Belt Types

Every contractor will profit by using these rugged machines to cut the cost of hand shoveling. Ball bearing rollers for long life! Other advantages, too.

Ask for Catalog 925

Geo. Hais Manufacturing Co., Inc.
143rd St. and Rider Ave., New York

A B R A M

Double Action Finishing Tools
"They put a man on his feet."



The steel float illustrated here is as fine a tool as the well-known Abram long-handled trowel. For rough surfacing, for road work, and wherever a high grade float finish is desired, this float of heavy steel will cut finishing costs seventy-five per cent.

There is an Abram double-action tool for every type of work. Send for catalog.

ABRAM CEMENT TOOL CO.
2300 Michigan Ave. Detroit, Mich.
Publishers of "The Finishing Touch"

Patch concrete roads quickly — cure with SOLVAY



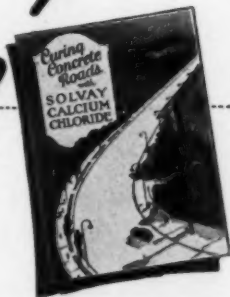
*A typical
patching
job with
Solvay.*

TRAFFIC conditions frequently require rapid curing of many small sections of concrete to repair quickly the pavement surfaces and avoid long detours.

The use of Solvay Flake Calcium Chloride as an admixture will insure rapid and satisfactory curing of the concrete. Heavy traffic can pass over a Solvay-treated patch in a few hours.

Use Solvay Flake Calcium Chloride in your next repair job—see how easy it is to make perfect patches quickly and without any special apparatus.

Complete specifications for all concrete curing, both surface and integral methods, are in the new Solvay booklet—it's free on request—send the coupon NOW!



THE SOLVAY PROCESS COMPANY

WING & EVANS, Inc., Sales Dept. 40 Rector Street, New York

Please send me booklet No. 2051 and quote price, and nearest shipping point—no obligation of course.

.....
.....
.....

Miami Scrapers are Helping to Give Ohio More Miles of Good Roads

Seventy-nine (79) Miami Scrapers and a goodly number of Miami Power Back Fillers are working every day on the State Highway System of Ohio, moving loose earth at a saving of more than 50% over former methods.

The first Miami Scraper was purchased only after an exhaustive study by State Engineers, and the fact that 79 are now in use tells own story.

As a contractor you should investigate the Miami Scraper before taking your next job, as it will allow you to figure lower on the moving of your loose earth in grading and filling operations; for "The Miami" picks up a full load and carries it on roller bearings to the dump, giving more loads per day with more earth per load.

Write today for complete information on the Miami Scraper and Back Filler

The Miami Trailer-Scraper Co.

610 S. Clay St.

Troy, Ohio



WIARD "2 in 1" PLOW

Contractors find this plow well adapted for rooter and furrow work. Hence, the name of Combination Rooter and Furrow



Plow. It saves the price of one plow.

It consists of only nine parts aside from braces and belts.

**WIARD
PLOW CO.**
BATAVIA, N. Y.
U. S. A.

THE "GROUNDHOG"

Loads, and Spreads or Dumps, Continuously!

No Stopping — No Backing Required

Here—at last—is the scraper that enables the tractor to do continuous, uninterrupted work on any dirt moving job! . . . The one scraper that loads, spreads or dumps on a pile and loads again automatically . . . The scraper that spreads evenly at any desired depth . . . That carries the load any distance required before spreading or dumping . . . That revolves backward to dump over embankments . . . That can be backed into the corner of excavation to load . . . That gives the operator perfect loading control—no over-loading or stalling of tractor . . .

That Moves More Earth in a Given Time Than Any Other Scraper of Equal Size!

Write us today for all the facts about the new "GROUNDHOG"

THE RODERICK LEAN COMPANY
MANSFIELD, O.

Illustration Shows Scraper in Loading Position



ENGINES - HOISTS - PUMPS

NOVO ENGINE CO.
Clarence E. Bennett, Vice-Pres. & Gen. Mgr.
LANSING — MICHIGAN

WANTED ACTIVE-SALES REPRESENTATIVES

This Company, located in west central Ohio, well financed, with a modern plant of ample capacity, manned by an organization that is thoroughly trained and are specialists in the production of excavating machinery, will shortly begin the manufacture of a combination Power Shovel, Crane, Drag-Line, Ditcher, Trencher, and Grade Leveller—each Accessory being interchangeable with the other. It will be one-half yard capacity and powered either with gasoline engine or electric motor. It is the direct result of twenty years' experience in the manufacture of like units, and a careful and painstaking survey of the needs of the market for a machine of this size. It will be a proven unit, advantage having been taken of the deficiencies of machines of the same size now being offered. It will sell at a reasonable price considering capacity and efficiency. The remuneration to the Representative is a broad one. We are seeking Individuals or Concerns who will, with our assistance, actively promote the sale of the machine. Full territorial rights will be extended those who can qualify.

Address: Box No. 116, Care

**CONTRACTORS' & ENGINEERS'
MONTHLY**

443 - 4th Ave.

New York City

CURE CONCRETE WHILE YOU MIX IT

*Put DOWFLAKE
Solution right in
the MIXER*



Write for complete
data.

You can now cure concrete while you mix it. That's good news for contractors and highway officials everywhere. The benefits can best be realized by thinking over the changes it will make in paving procedure.

First of all, it does away with all other curing processes—all earthing and ponding—all straw covering—all pumping of water for curing. In short, it eliminates any and every kind of awkward and costly surface curing methods, inspection and worry.

With this method, the curing agent Dowflake is incorporated with the gauging water in the mixer. It penetrates every part of the mix and, consequently, cures the entire slab, through and through. There are no dry spots—no uneven curing, no places to patch the first month because some spots were missed in surface curing.

Cure concrete while you mix it. Get 50% greater strength in seven days. Make machinery and equipment do double duty, leave behind you a clean pavement ready for inspection and final approval. You can do all these things and can lengthen your construction season by making sure that 2 pounds of Dowflake goes into the mixer batch every time you put in a bag of cement.

THE DOW CHEMICAL COMPANY
143 Water St., Midland, Mich.

Branch Sales Offices: 90 West Street, New York City
Second and Madison Streets, Saint Louis



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

HAWLEY TIE BOLTS

*for Quicker, Better
Wallwork*



"The Tie Stays In — The Bolt Comes Out." No clipping, cutting back of concrete, or chipped walls to patch. Use same bolts on every job. Set your forms twice as fast. When wall is set, turn out the bolts and the forms literally fall away—in perfect condition. You save time and money. Write for interesting circular today. Distributors in principal cities.

Hawley Tie Bolt Co. 4715 3rd Ave. So., Minneapolis, Minn.

Buhl

A variety of types and sizes to meet every portable compressor demand—Sold through reliable dealers and distributors.



Send for bulletin today

The Buhl Company
MANUFACTURERS

General Office:
405 S. DEARBORN ST.
CHICAGO

BUHL type "Y" furnished in 115 and 180 ft. displacement

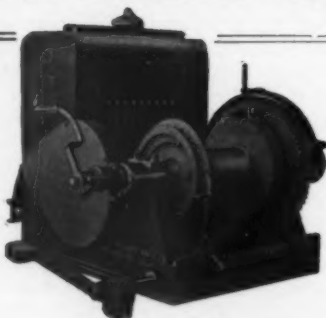
UNIVERSAL HOISTING MACHINERY CORP.

420 Sycamore St., BUFFALO, N. Y.

DERRICKS, STEEL OR WOOD; WIRE
ROPE SHEAVES AND BLOCKS;
WINCHES, HAND AND ELECTRIC

*Let us show you our real design of Derrick
Fittings Backed by an Unusual Guarantee*

FLORY GASOLINE HOISTS



A COMPLETE LINE

FROM 10 H.P. TO 100 H.P.
SINGLE, DOUBLE OR THREE DRUMS

Fifty years of hoist building coupled with the most advanced ideas of construction are embodied in Flory Hoists. Oversize power plants. Asbestos frictions. Flory non-heating screw friction thrusts; geared drives; cut gears throughout, convertible bed plates, alumina lubrication. Write for literature.

S. FLORY MFG. CO.
BANGOR, PA.

SALES AGENTS IN ALL PRINCIPAL CITIES

Flory also builds Steam, Electric, Belt Hoists, Cableways, Dredging Machinery, Mine Hoists, Slack Line and Drag Scraper Outfits.

Aeroil
BURNERS

"Smokeless" — "Oil Burning"

Asphalt Melting Kettles
Lead Melting Furnaces
Patrol Patching Heaters
Paving Tool Heaters

Pavement Surface Heaters
Sand Drying Pans
Portable Kerosene Torches
Oil Burners for Kettles

No Smoke—No Sparks—No Ashes—Just Heat

Send for Illustrated Catalogues and Testimonials

AEROIL BURNER COMPANY, Inc.
UNION CITY NEW JERSEY



Literature on Request.

PACIFIC FLUSH-TANK CO.

Slager Bldg.
NEW YORK CITY

4241 Ravenswood Ave.
CHICAGO, ILL.

Clean Sewers

Miller Siphons prevent sewers clogging from accumulated refuse. They regularly flush out the filth. No moving parts. Our complete descriptive text books give all details.

*What the Mayor of Gilman, Ill.
thinks of*
STANOLIND PAVING ASPHALT



City of Gilman
CHAS. E. HARRIS, CITY CLERK
Gilman, Ill.

MAYOR
J. V. SNYDER
CITY TREASURER
FRANK GARNER
CITY COLLECTOR
CHAS. E. HARRIS

ALDERMEN
JOHN CROWNECKER
ED. L. HARRISON
LOUIS KRAFT, JR.
ARTHUR KELLER
SAM. KUTYEMAN
HERBERT LEE

June 29th, 1926.

Standard Oil Company,
Peoria, Illinois.
Gentlemen:-

With reference to South Thomas Street, Gilman, Illinois. This street has been down a little over a year and is in excellent condition. It is the best street in town.

We are contemplating further street improvements and your Stanolind Paving Asphalt will be given first consideration.

Yours very truly,

J. V. Snyder
Mayor

JVS:AT

STANDARD OIL COMPANY
(INDIANA)
910 S. Michigan Ave. Chicago, Ill.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

GALION INTERNATIONAL

E-Z Lift Motor Graders

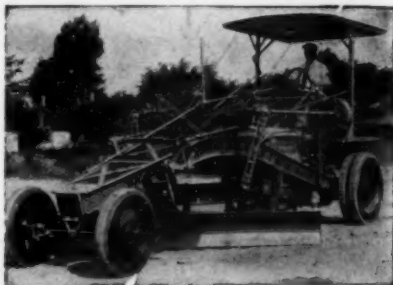
Powerful, Dependable, McCormick-Deering Industrial Tractor, Rear End Control, Galion E-Z Lift worm gearing running in oil, E-Z Lift springs, extra curved mouldboard and many other Galion features combine to make this the easiest operating and most satisfactory motor grader in the world.

Write Today for Bulletin

The Galion Iron Works & Mfg. Co.

Galion, Ohio

The World's Largest Road Machinery Plant



KIEL MASTER MIXER

Gives More For The Money

It's only natural that the Kiel Master mixer should do more work than any other mixer because it is better built.

SPECIAL FEATURES:

Dust-proof Counter Drive Shaft Bearings—Drum Spindle Bearing 10 inches Long—Balanced Drum and Yoke—Large Capacity—Special Mixing Blades—Plenty of Power—Timken Roller Bearing Wheels—Positive Gear Drive.

Write for Catalog and Prices

KIEL MACHINE COMPANY

KIEL, WIS.



KIESLER

Clam Shell Buckets

Guaranteed to give satisfaction. Catalog on request.

Jos. F. Kiesler Company

936 W. Huron Street, Chicago, Ill.



Oil Burning

Asphalt Tool Heaters Asphalt Surface Heaters

Heaters for Asphalt, Pitch and Tar Kettles, Lead Melting Furnaces, Blow Torches.

Send for Special Bulletins

HAUCK MANUFACTURING CO.

Established 1900

149 Tenth St.

Brooklyn, N. Y.



Lower your costs

WIN more jobs

"American" portable woodworking machinery is helping hundreds of contractors to cut labor costs and lower their bids. Ask for details on this Band Saw and our Saw Rigs and Hoists.

Agents wanted for open territory

AMERICAN SAW MILL MACHINERY CO.

MAKERS OF WOODWORKING AND SAW MILL MACHINERY

171 Main Street

Hackettstown, N. J.



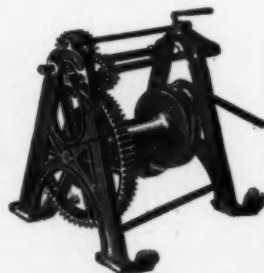
DOBBIE

Derricks and Winches

Complete Stock of Fittings and Winches on hand at all times.

Write for our complete Catalog No. 22.

Dobbie Foundry & Machine Company
Niagara Falls, N. Y.



When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

When the thermometer drives humanity to the ocean!



*Ocean Boulevard, Long Branch, N. J., paved
with durable and resilient TEXACO Asphalt.*



*Main Street, Asbury Park, N. J.,—the TEXACO
Asphalt surface is unmarred by its heavy traffic.*

In the sweltering summer months, when the thermometer clings stubbornly at the hundred mark, there is no word in the language that holds such charm as the five letter one, "ocean." It draws humanity to the beaches by the thousands.

One result of this wild scampering is a steady stream of traffic on the thoroughfares serving the ocean front.

Under this traffic, as under all other kinds, pavements of TEXACO ASPHALT again demonstrate their durability and perfect service.

Ocean Boulevard, Long Branch, N. J., and Main Street, Asbury Park, N. J., are typical of thoroughfares in many of the bathing resorts bordering the Atlantic and the Gulf, which are paved with TEXACO ASPHALT.

TEXACO

New York
Philadelphia
Richmond
Boston
Jacksonville



THE TEXAS COMPANY, U.S.A.

Asphalt Sales Department

17 Battery Place, New York City



Chicago
Cleveland
Kansas City
Dallas
St. Louis
Houston

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

Concrete Mixers, Hoists, Wheelbarrows, Warehouse Trucks, Steel Scrapers, Hand Carts, Rubber Tired Wheels, Skids, Electric Tractors, Fibre Wheels, Trailer Trucks.

Nearly half a century of manufacturing and distributing experience is back of Lansing Products. Buyers of Lansing equipment are assured of prompt shipment, efficient repair service and low freight rates.

Send for Catalogs No.
12 and No. 19-C.

LANSING-COMPANY

Lansing

Michigan

BRANCHES

Chicago Boston New York Minneapolis
San Francisco Kansas City Philadelphia



14-S Mixer



*Knock-down type
gives intense heat.
Can be used any-
where.*

SALAMANDERS

For years the choice of contractors. Littleford Salamanders do the drying or heating job right. Economical to ship or store on account of "knock-down" feature. Burn any kind of fuel. Made in 3 standard sizes. Cone-shaped ash pan. Heavy grates.

Write for particulars and prices

LITTLEFORD BROS.

485 EAST PEARL ST.

CINCINNATI

OHIO



NATIONAL
Concrete
Block Machines
Give Service

Dealers Everywhere

*Send for
Catalogue*

CEMENT BLOCK MACHINERY CO.
50 COLUMBIA ST., NEWARK, N. J.

FOR SALE

- 1—100-H.P. double-drum Gasoline Hoist.
(Wonderful Buy)
- 1—8x10, DC DD Lidgerwood Steam Hoist.
(Quoted at a Price to Sell Quick)
- 1— $\frac{1}{4}$ -yard Pioneer Slackline Drag Bucket.
(At a Bargain)

S. O. NAFZIGER

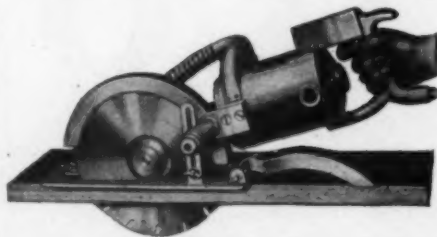
Kalamazoo

Michigan

WODACK electric HAND SAW

4 inch CUT

SAFETY GUARD



8 and 11 inch diameter blades—G. E. Universal motor

Write for Circular

F. L. ROGERS & CO.

Monon Bldg.

Chicago, Ill.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



Culverts

A GOOD ROAD

A good road that doesn't stay good is usually so because of the culvert under it. Monolithic or Masonry Culverts will crack due to uneven settling of fills, vibrations or other causes and these cracks gradually become more pronounced causing a sinking of the road directly over it. Compare this condition with the smooth roads that have

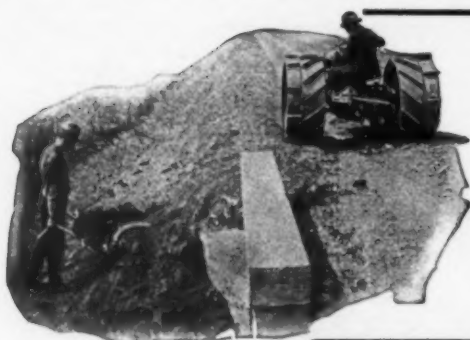
Newport Corrugated Culverts

under them. Installations made more than a decade ago show little or no signs of depreciation. Proving their superiority—economy—and Resistance to the elements, Vibrations and tremendous pressures.

**NEWPORT CULVERTS ARE EASILY
INSTALLED BY UNSKILLED LABOR**



Write for descriptive literature and further data.



Let the Fordson Build Your Berms and Various Backfilling Jobs

The Miami Backfiller Extension for the Fordson Tractor and Miami Power Winch will lower your backfilling and berm building costs.

This powerful Miami Winch, which operates from the power take-off shaft of tractor through the simply constructed extension, allows you to work on backfilling or berm building from either side of tractor.

Its ease of operation is unique. Operates from the driver's seat. Cut costs about 50 per cent. Does not interfere with the use of the tractor for other purposes.

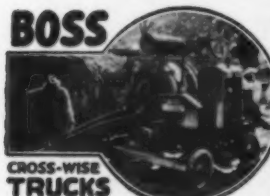
Write today for free Circular describing operation and uses in detail

The Miami Trailer-Scraper Co.

610 S. Clay St.

Troy, Ohio

BOSS



CROSS-WISE TRUCKS

Change easily and quickly made—converts BOSS One-Two Bagger into end discharger for paving. Write for catalog giving full details on BOSS Hoists and Heavy-Duty Mixers, including Tilters.

The American Cement Machine Co., Inc.
Dept. 237 Kankakee, Iowa

Branch offices and warehouses in all big cities.

2 IN 1 MIXER

Makes End or Side discharge from One-Two Bagger with Boss Cross-Wise Trucks



Detail Cross-Wise Trucks

Russell Motor Patrol

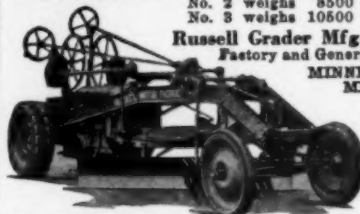
Made in Two Sizes

No. 2 Fordson Tractor No. 3 McCormick-Deering for Power

No. 2 weighs 8500 lbs.

No. 3 weighs 10500 lbs.

Russell Grader Mfg. Co.
Factory and General Offices
MINNEAPOLIS, MINN.



Write for Catalog Showing Full Line



MAKE MORE MONEY—



Patent Applied for

Equip your Ford Truck with a Stewart Quick Acting Self-Dump Steel Body. Operates from the driver's seat—no power, no hoist, nothing to get out of order. Order yours today—it's fully guaranteed. Or write for complete information.

THE STEWART IRON WORKS CO., Inc.

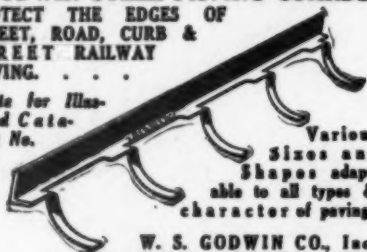
Covington, Ky.

Cincinnati, Ohio

GODWIN STEEL PAVING GUARDS

PROTECT THE EDGES OF STREET, ROAD, CURB & STREET RAILWAY PAVING.

Write for Illustrated Catalog No. 23.



Various Sizes and Shapes adaptable to all types & character of paving.

W. S. GODWIN CO., Inc.
Rice & McComas St., Baltimore, Md.

CHAUSSE

Oil Burning Tool
and Surface Heaters
Kerosene Torches
Portable Asphalt Plant

CHAUSSE OIL BURNER CO.

1227 W. Beardsley Ave., Elkhart, Ind.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

TRIDENT METERS



AQUAFAX is a 56-page, monthly magazine giving current news and accurate information regarding the conservation of water. The regular subscription price is \$1.00 per year, but it will be sent free upon request to engineers, municipal heads and civic organizations.

THE Trident Frost-Proof Meter, universally accepted in climates where the temperature varies and goes below the freezing point. This frost-proof meter is constructed so that when the temperature reaches freezing, the special bottom, with which this meter is equipped, will break, eliminating the necessity of replacing the entire meter.

The cost of additional bottoms is very slight.

Send for a copy of the 86-page book illustrating and describing all types and sizes of Neptune Trident Meters.

NEPTUNE METER COMPANY

Pioneers in Meter Progress

50 EAST FORTY-SECOND STREET, NEW YORK CITY

NEPTUNE METER CO., LTD., 345 SORAUREN AVE., TORONTO, CANADA

Boston Chicago San Francisco Atlanta Los Angeles Seattle Portland St. Louis Denver

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you

METERS

PITTSBURGH METER CO.



The Tropic—An all-bronze Water Meter, with connection spuds attached to the lower case. Particularly designed for warm sections of the country.



The Arctic—A frost-bottom Water Meter, especially designed for cold sections of the country.

These two meters embody exactly the same mechanical features, the only difference being the changes necessary to provide a frost-breaking feature in the Arctic.

Either of these meters will be equipped with a COMPLETELY ENCLOSED intermediate train RUNNING IN OIL, if desired.

[Write or wire nearest office for full information.]

PITTSBURGH METER CO.

General Office and Works: 7800 Susquehanna St., Pittsburgh, Pa.

New York
Chicago

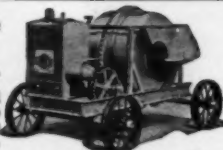
SALES OFFICES
Kansas City
Columbia, S.C.

Seattle
Los Angeles

Years of Reliable Service

Smith 7-5 Non-Tilter

This mixer's record of dependable service makes it one of the most popular models, contractors every-



where agreeing that its speedy mixing and discharge action, easy handling and portability, and efficient operation and low maintenance cost, are features unequalled by any competitive mixer. Catalog on request.

THE T. L. SMITH COMPANY

1030 32nd St.

Milwaukee, Wis.

Sales Offices and Service Stations in All Principal Cities



WATSON

Bottom Dump Wagons 1 to 5 cu. yds.
Contractors' Standard for 37 years.

Immediate Deliveries

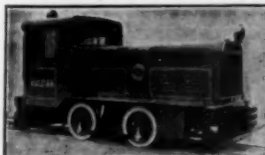
REX-WATSON CORP., Canastota, N. Y.



THE HARDEST EXCAVATING PROBLEMS MADE EASY with Sauerman Slackline Cableways. They dig, convey, and elevate all in one continuous operation. They dig under water, in coarse gravel, wet material, and hard dry ground. One man does all operating. Write for our Pamphlet No. 22.

SAUERMAN BROS., INC., 464 S. Clinton St., Chicago

VULCAN GASOLINE LOCOMOTIVES



**FOUR
SPEED
WORM
GEAR
DRIVE**

VULCAN IRON WORKS
WILKES-BARRE PENNA.



You Buy
STRENGTH - SERVICE - SAFETY
when you purchase
ANVIL BRAND BLOCKS
For
MANILA OR WIRE ROPE.

We make all standard styles and sizes and can also supply any special blocks, if you will furnish specifications.

Send for catalog C.E.

WESTERN BLOCK CO.
Lockport, N. Y.

New York City Chicago

Did You Consult the Classified Index

On Pages 3 to 38?

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



[60 inch pipe loaded
on a barge at our
Burlington wharf]

Unusual Shipping Facilities for U. S. Cast Iron Pipe—

THE strategic location of our several plants permits the selection of the most desirable and economical form of transportation by canal, tidewater or rail.

This feature is especially important in handling large contracts promptly and with the lowest possible shipping costs.

As pipe and special castings of standard dimensions are interchangeable, it is possible when necessary to ship orders from two or more works to facilitate filling of the largest contracts.



Write for United States Cast Iron
Pipe handbook. It contains a wealth
of valuable data for engineers.

United States Cast Iron Pipe and Foundry Company

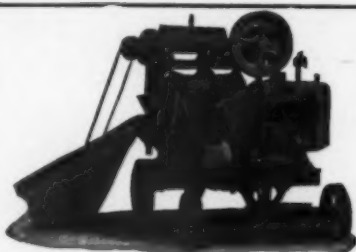
SALES OFFICES

Philadelphia: 1421 Chestnut St. New York: 71 Broadway
Chicago: 122 So. Michigan Blvd. San Francisco: 3rd & Market Sts.
Birmingham: 1st Ave. & 20th St. Pittsburgh: 6th & Smithfield Sts.
Buffalo: 975 East Ferry Street Dallas: Akard & Commerce Sts.
Cleveland: 1150 East 26th Street Kansas City: 13th & Locust Sts.
Minneapolis: 6th St. & Hennepin Ave.

General Offices:

Burlington, New Jersey

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.



Atlas YARDAGE

120 to 150 Cu. Yds. in 10 hours with an Atlas one bag Mixer.

Atlas Mixers are of sturdy dependable construction, and the 7-S is regularly equipped with multiple cylinder LeRoi Engine, giving excess power.

We build $3\frac{1}{2}$ ft., $\frac{1}{2}$ bag, 1 bag and 2 bag Mixers.

Dealers write for agency proposition.

ATLAS ENGINEERING COMPANY

3036 GALENA STREET,

MILWAUKEE, WIS.



Pennsylvania Cement

:-: QUALITY :-: SERVICE :-:

PENNSYLVANIA CEMENT CO.

New York

[Boston

Philadelphia

Buffalo



REINFORCED CONCRETE PIPE

Both the engineer who desires a sewer pipe having the least frictional resistance to flow and the contractor who desires the pipe that is easiest to lay properly endorse precast reinforced concrete sewer pipe made by the Newark Concrete Pipe Co.

Write us for sketches showing type of joint furnished.

NEWARK CONCRETE PIPE CO.

462 BROAD ST.

NEWARK, N. J.

NEWARK, N. J. BUFFALO, N. Y. DOVER, N. J.

ROCHESTER, N. Y. CLEVELAND, O.

Marion Dump Body

Length: 73 inches. Width: 48 inches. Sides: 18 inches. Front and end gate: 24 inches. CAPACITY: 34 cubic feet



Here it is—the real producer that never balks. It's durable and dependable.

Marion bodies can be used with hand hoist or as an automatic type.

This is a most satisfactory Dump Body for handling

stone, gravel, sand, dirt, coal and other loose material. Always ready for the hardest kind of service.

The Marion is the favorite of leading Highway Contractors. It is the dump body of exclusive features.



Showing Marion Body equipped with automatic sub-frame.

THE MARION STEEL BODY CO.
MARION, OHIO

Chlorination



Manual Control Solution
Feed Chlorinator—
Type MSP
A new rugged apparatus
in which the Chlorine is
measured under a
Vacuum

has become standard practice for the sterilization of water,—the sanitation of swimming pools,—the disinfection of sewage,—the elimination of noxious odors,—and for many other purposes,—largely because of the accuracy and reliability of W & T Chlorine Control Apparatus.

Chlorination of drinking water is not only unsurpassed community health insurance but it is downright good business insurance,—in view of the recent tendency of the Courts* to award damages to persons stricken with intestinal disease caused by polluted water.

*See Engineering News Record, Vol. 97, No. 1, p. 30.

"The only safe water is a sterilized water"



WALLACE & TIERNAN

COMPANY, INCORPORATED

NEWARK - NEW JERSEY



NEW YORK CHICAGO KNOXVILLE SAN FRANCISCO MINNEAPOLIS PITTSBURGH DALLAS KANSAS CITY
SEATTLE ST. LOUIS BUFFALO HARRISBURG LOS ANGELES INDIANAPOLIS DETROIT
WALLACE & TIERNAN, LTD., TORONTO, CANADA WALLACE & TIERNAN, LTD., LONDON, ENGLAND

SA1

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

DIRECTORY of ENGINEERS, CONTRACTORS, ARCHITECTS, ETC.

**INTELLIGENT
PLANNING**
**PROPER
CONSTRUCTION**
ALBRIGHT & MEBUS
Civil Engineers

Town planning and municipal improvements, parks, drainage, sewerage and sewage disposal.

 1502 Locust Street
PHILADELPHIA

GEORGE L. BEAN

 201 N. Broad Street,
PHILADELPHIA, PA.

 Water Supply; Water Works.
Reports, Design, Appraisals.

BLACK & VEATCH
Consulting Engineers

Water Supply, Water Purification, Sewerage, Sewage Disposal, Power Plants, Valuations, Special Investigations and Reports.

 E. B. BLACK N. T. VEATCH, JR.
Mutual Bldg., KANSAS CITY, MO.

BANKS & CRAIG

 51 East 42nd St., New York City
709 Telegraph Building
Harrisburg, Pa.
721 District National Bank
Washington, D. C.

 Municipal, hydraulic and sanitary engineers.
Design, operation, valuation.

Bennett, Howard D.
Consulting Engineer

 Dredges for every service.
Sand and Gravel Plants;
Floating Equipment;
Valuation; Supervision;
Reports; Plans; Specifications;
Etc.
Baltimore, Md., 2114 Allendale St.

THOMAS F. BOWE
CONSULTING ENGINEER

 REPORTS WATER SEWERAGE,
VALUATION TREATMENT OF
DESIGN SEWAGE
OPERATION INDUSTRIAL PLANTS

 110 William Street,
New York City

FREDERICK SNARE CORPORATION
Contracting Engineers

114 Liberty Street, New York

Harbor Works, Railroads, Bridges, Industrial Plants, Sugar Plants, Steel and Masonry Construction, Pipe Lines, Water Works.

 Cable Address, Santee, New York.
Cable Address, Pawnee, Havana.

 Western Union and Lieber Codes Used.
Havana Office, Paseo de Marti 110-A

W. E. Conard

J. S. Busby

CONARD & BUZBY

BURLINGTON, N. J.

Specialists on Water Works—

 Materials
Specifications

 Reports
Inspections

 Designs
Tests

OVER HALF A CENTURY IN CHICAGO

THE EDGAR A. ROSSITER CO.
CONSULTING ENGINEERS

160 North LaSalle St., Chicago

Water supply, sewerage, and sewage disposal, drainage, farm and levee-pumping plants, electric light systems, pavements, track elevation, tunnels, mining.

**PERINE & COMPANY
ACCOUNTANTS AND AUDITORS**

Audits — Accounting Investigations — Systems

EXPERIENCED AS ACCOUNTANTS SINCE 1898

 Singer Building
146 Broadway
New York City

 Investment Building
15th & K Sts., N. W.
Washington, D. C.

NICHOLAS S. HILL, Jr.
CONSULTING ENGINEER
WATER SUPPLY—SEWAGE DISPOSAL—HYDRAULIC DEVELOPMENTS.

 Reports, Investigations, Valuations, Rates, Design, Construction, Operation,
Management, Chemical and Biological Laboratories

112 East 19th Street

New York City

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

J. H. A. BRAHTZ

*Consulting Engineer
To Municipalities*

601-603 Builders Exchange
St. Paul, Minn.

Clark E. Jacoby Engineering Co.

Consulting Engineers

River and Flood Control, Water
Power Development, Land Reclama-
tion, Drainage, Topographic Sur-
veys, Bridges, Reinforced Concrete.

Interstate Bldg.
KANSAS CITY, MO.

New York Testing Laboratories

*Chemical & Physical Tests, Mi-
croscopical Examinations.*

Electrical Tests, Power Plant
Tests, Expert Inspections, Cities
and Industries.

80 Washington St., New York City

Chester Engrs., The J. N.

J. N. Chester D. E. Davis
J. F. LaBoon J. T. Campbell
E. E. Bankson

*Consulting, Hydraulic, Sanitary
and Valuation Engineers.*

Union Bank Bldg., Pittsburgh, Pa.

**The
JENNINGS-LAWRENCE CO.**

*CIVIL AND
MUNICIPAL ENGINEERS*

511-12 Hartman Bldg.

COLUMBUS OHIO

PEASE LABORATORIES, Inc.

Formerly

LEDELL LABORATORIES

*Sanitary, Bacteriological and Chem-
ical investigations for the Com-
munity or Individual*

39 W. 38th St., N. Y. City

**Davison, Ransom & Burton,
Inc.**

*Civil & Consulting Engineers
Fort Myers, Fla.*

Seventeen years' practice in South-
west Florida. Dependable reports
on prospective Land Purchases or
developments.

Landreth, Olin H.,

Consulting Engineer.

Hydraulic and Sanitary Engineer-
ing, Consultation, Investigation
Valuation.

New York, No. 156 Fifth Ave.

CLARENCE D. POLLOCK

Member Am. Soc. C. E.

Consulting Engineer,

Pavements, Highways, Drainage, Sew-
erage, Town Planning and General
Municipal Problems.

Reports, Specifications, Supervision.
Park Row Building, New York City.

CHAS. K. DODD

Civil Engineer

Preliminary Surveys, Design, and
Supervision of Construction.

Highways Water
Drainage Paving
Sewerage Structures
Estimates and Reports
PUNTA GORDA, FLORIDA

E. F. LAYMAN C. E.

Sewers, Water Supply, Pav-
ing, City Planning.

514 MAIN STREET

CINCINNATI, OHIO

Alexander Potter, C.E.

Hydraulics, Sanitation, Con-
crete Structures Designed
Executed.

50 Church Street, New York
(Hudson Terminal) Tel: Cortland 5501

**FULLER & McCLINTOCK
ENGINEERS**

New York, 170 Broadway

PHILADELPHIA, PA., 1001 Chestnut St.
TOLEDO, OHIO, 352 Summit-Cherry Bldg.
KANSAS CITY, MO., 600 Walnut Street
WEST PALM BEACH, FLA., Room 2 Real-
ty Bldg., 115½ So. Poinsettia St.

T. H. MANDELL

CIVIL ENGINEER

*Design and Supervision of Con-
struction.*

HIGHWAYS BRIDGES
PAVING STRUCTURES
SEWERAGE SURVEYS
DRAINAGE REPORTS
RAILROADS ESTIMATES

Frank Bldg., Lake Charles, La.

C. E. SMITH & CO.

CONSULTING ENGINEERS

2073 Railway Exch. Bldg., St. Louis, Mo.

Investigations, reports, appraisals, expert
testimony, bridge and structural work, railway
problems, electrification, grade crossing elimi-
nation, foundations, highways, docks, water
supply, river and flood protection, drainage
and sanitation, power plants.

**GANNETT, SEELYE &
FLEMING, ENGINEERS, Inc.**

*Engineering, Appraisals,
Construction, Management.*

52 Wall Street, New York

Harrisburg, Pa. New Orleans, La.

Midwest Laboratories

Webster City Iowa

Asphalt-Concrete Aggregates—Pav-
ing—Water Supply—Sanitation—
Special Problems. Chemical An-
alysis—Physical Tests—Field and
Laboratory Inspection—Consulta-
tion.

Clyde Potts

30 CHURCH ST. NEW YORK

Civil and Sanitary Engineer

Sewerage and Sewage Disposal
Works, Hydraulics, Water Works,
Filtration, Reports, Plans and
Estimates.

New York City 116 West 30th St.

A. E. HANSEN

Hydraulic & Sanitary Engineer

Design & Supervision of Construction
Sewerage Water Works
Sewage Disposal Water Purification
Drainage Water Works
Expert Services in Litigation

**MORAN, MAURICE &
PROCTOR**

Consulting Engineers

Foundations for Buildings, Bridges
and Dams, and all Sub-structure
Work. Investigations, Reports,
Consultations, Designs and Super-
vision.

New York City, 342 Madison Ave.

SHENEHON, FRANCIS C.

Member Am. Inst. Cons. Engrs.

Member Am. Soc. C. E.

Hydraulic Engineer

839 Metropolitan Bank Bldg.

Minneapolis, Minn.

HAZEN & WHIPPLE

*CONSULTING HYDRAULIC
and SANITARY ENGINEERS
WATER SUPPLY and SEWERAGE*

Allen Hazen L. M. Babbitt
O. M. Everett Malcolm Pirnie

23 W. 44th Street New York

Mullergren, Arthur L.

Consulting Engineer

Specialist in Electric Light,
Power and Water Pumping.

Kansas City, Mo., 555 Gates
Building

**S. A. SIVERTS, JR.
MUNICIPAL ENGINEER**

300 Builders' Exchange
Minneapolis, Minn.

HARVEY STANLEY*Consulting, Designing and Supervising Engineer*

Bridges, Buildings and Miscellaneous Structures. Alternate Designs for Bridges. Reports and Assistance in Financing.

Miami and Ft. Lauderdale, Fla.

CORNELIUS C. VERMEULE*Consulting & Designing Engineer*

Water Supply, Sewerage, Power Plants.

Valuations and Reports on Industries and Public Utilities.

38 Park Row, New York

Gilbert C. White, G. E.

M. Am. Soc. C. E.

M. Am. Soc. M. E.

CONSULTING ENGINEER

Durham, N. C.

An organization of Civil, Mechanical, Electrical and Chemical Engineers. Waterworks, Streets, Power Plants.

DR. D. B. STEINMAN,

M. Am. Soc. C. E., M. Am. Ry. Eng. Assn.

CONSULTING AND DESIGNING ENGINEER

Bridges and other Structures. Engineering Projects. Design, Supervision, Investigations, Reports, Valuations, Advisory Service.

25 Church Street New York

GERALD J. WAGNER*Consulting Electrical Engineer***GRAND RAPIDS, MICH.**

Consultant for Municipalities on Gas, Street Railway, Electric and Telephone Problems.

THOS. H. WIGGIN**CONSULTING ENGINEER**

415 Lexington Ave., New York City

Reports, Designs, Supervision, Valuation: Water Supply, Sewerage, Flood Control, Tunnels.

TAYLOR, HENRY W.*Consulting Engineer*

Water and Supply, Sewerage, Hydraulic Developments.

New York City, 149 Broadway

WHEELER, WALTER H.*Designing and Cons. Engineer*

Investigations, Reports, Plans, Specifications, Supervision of Construction, Valuations for Structures, Bridges, Buildings, Dams, Mfg. Plants, etc.

Met. Life Bldg., Minneapolis, Minn.

S. B. WILLIAMSON*Consulting Engineer*

Lee H. Williamson, Associate

Members Am. Soc. C. E.

Water Supply, Hydro Electric Plants, Sewage Disposal, Handling Plants, Port Development, Reports, Designs, Supervision, Appraisal.

Box 551

Charlottesville, Va.

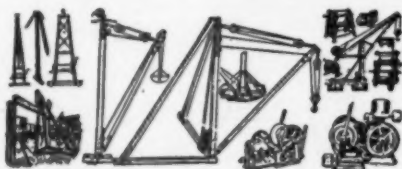
**EAGLE DUMP WAGONS**in
1½ yard to 5 cu. yard capacity

Grading Wagons and Ash Wagons

The EAGLE WAGON WORKS

AUBURN

NEW YORK

WE HAVE A COMPLETE LINE
OF DERRICKS AND WINCHES**SASGEN DERRICK CO.**

103 W. Grand Ave.

Chicago, Illinois

HOISTING BLOCKS**STAR BRAND***Are Always Reliable*

Made For

Every Condition of Service

Sold By

Leading Supply Houses

or

BOSTON & LOCKPORT BLOCK CO.

NEW YORK

EAST BOSTON

CHICAGO

HONHORST TAR HEATERS*"Built for service"***ALL STYLES**

Portable and Stationary

25 to 200 gallons

See our page in Street Construction Section
Municipal Index for the Kettle you need

or

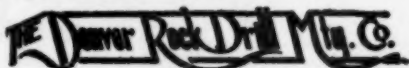
*Write for Catalog.***THE JOS. HONHORST CO.**

1016 W. 6th St.

Cincinnati, O.

**The "High Sign"**

THE WAUGH sign on a Rock Drill, Drill Steel Sharpener, Concrete Breaker or Clay Digger, is the contractor's assurance of high speed, high efficiency, and completely satisfactory performance.



DENVER, COLORADO

The geographical location of these distributors may be found by consulting the map shown on the two following pages.

149-
151
0.14

DISTRIBUTORS OF CONSTRUCTION EQUIPMENT

The following cards (arranged by states) show the names of dealers in contractors' equipment and supplies, with a record of the various lines handled. Buyers will find this list a convenient means of getting in touch with dealers who make a point of giving satisfactory service and prompt shipments. The location of these distributing points may be found on the map shown on the two following pages.

ALA.—ARK.—CALIF.

C. B. DAVIS ENGINEERING CO.

Brown Marx Bldg. Birmingham, Ala.

CRANES PUMPS
CONVEYORS BUCKETS
BELTS GEARS
SCREENS SILENT CHAINS

Representing

Robins Conveying Belt Company
Morgan Engineering Co.
Nordberg Mfg. Co.
Wheeler Mfg. Co.
Aldrich Pump Company
G. H. Williams Company
William Ganschow Company

JOE LYONS MACHINERY CO.

Contractors' Equipment and Supplies

112 Louisiana St. Little Rock, Ark.

Representing:

REX—Mixers and Pavers
CLYDE—SASGEN—Derricks and Hoists
BLAW-KNOX—Curb, Gutter and Road Forms,
Bins, Batchers, Clamshell Buckets, Truck
Turntables
RED STAR—Wheelbarrows and Concrete Carts
RED EDGE—Shovels and Picks
BARNES—Pumps and Compressors
NORTHWEST—Shovels, Cranes and Draglines
IDEAL—Concrete Block Machinery and Molds
CLIMAX—LEROI—FULLER & JOHNSON—
Engines
OIL FULL—Road Tractors
Also anything else a contractor uses

JOHN D. TURNER

921-927 Pioneer Bldg.

Birmingham, Alabama

MATERIAL HANDLING EQUIPMENT

REPRESENTING

Barber-Greene Co.—Portable Conveyors, Self Feeding Bucket
Loaders, The Ditcher With The Vertical Boom.
Easton Car and Construction Co.—Industrial Cars and Track-
Turntables, Roll Over Dump Bodies.
Lakewood Engineering Co.—Concrete Construction and Road
Building Equipment.
Nordberg Manufacturing Co.—Trackshifters, Shovelers.
Northwest Engineering Co.—Crawler Crane, Dragline, Shovels.
Shaw-Enoch Co.—SHAWNEE Road Builder and Maintainer
Universal Crane Co.—Truckcranes.
Gen. D. Whitcomb Co.—Electric and Gasoline Locomotives.

The BROWN-BEVIS CO., Inc.

470 East Third St., Los Angeles, Cal.

DISTRIBUTORS

T. L. Smith Co.—Concrete Mixers, Pavers and Excavators
J. D. Adams and Co.—Adams Lanning Wheel Graders
Byers Machine Co.—Hoists, Cranes and Truckcranes
Wood Shovel & Tool Co.—Wood Molybdenum Shovels
Lakewood Engineering Co.—Concrete Paving Machinery and
Road Finishers
Gen. Hideo Mfg. Co.—Truckloaders and Conveyors
Barnes Mfg. Co.—Barnes Pumps
The Owen Bucket Co.—Clam Shell Buckets
The Buckeye Traction Ditcher Co.—Curb and Trench Ditchers
Rex-Watson Corp.—Dump Wagons
Universal Crusher Co.—Crushers
Traylor Engineering & Mfg. Co.—Rock Crushing Equipment
Osgood Co.—Power Shovels
Four Wheel Drive Auto Co.
Littleford Bros.—Tar and Asphalt Heaters, etc.

Member: Associated Equipment Distributors

The Young & Vann Supply Co.

Birmingham, Ala.

Complete line of Contractors' Equipment and
Supplies.

REPRESENTING

Smith Concrete Mixers and Pavers
Novo Hoists, Pumps, etc.
Blaw-Knox Steel Forms, Batch Plants, Clam
Shell Buckets
Worthington Pumps and Air Compressors
Thew Gas, Steam and Electric Shovels
Baker Backfillers and Unloaders
Archer Concrete Towers
Rex-Watson Dump Wagons
Red Edge Shovels and Picks
Akron Wheelbarrows
Carey Elastite Expansion Joint
M. & M. Form Clamps

COAST MACHINERY CORPORATION

464 East Third St., Los Angeles, Calif.

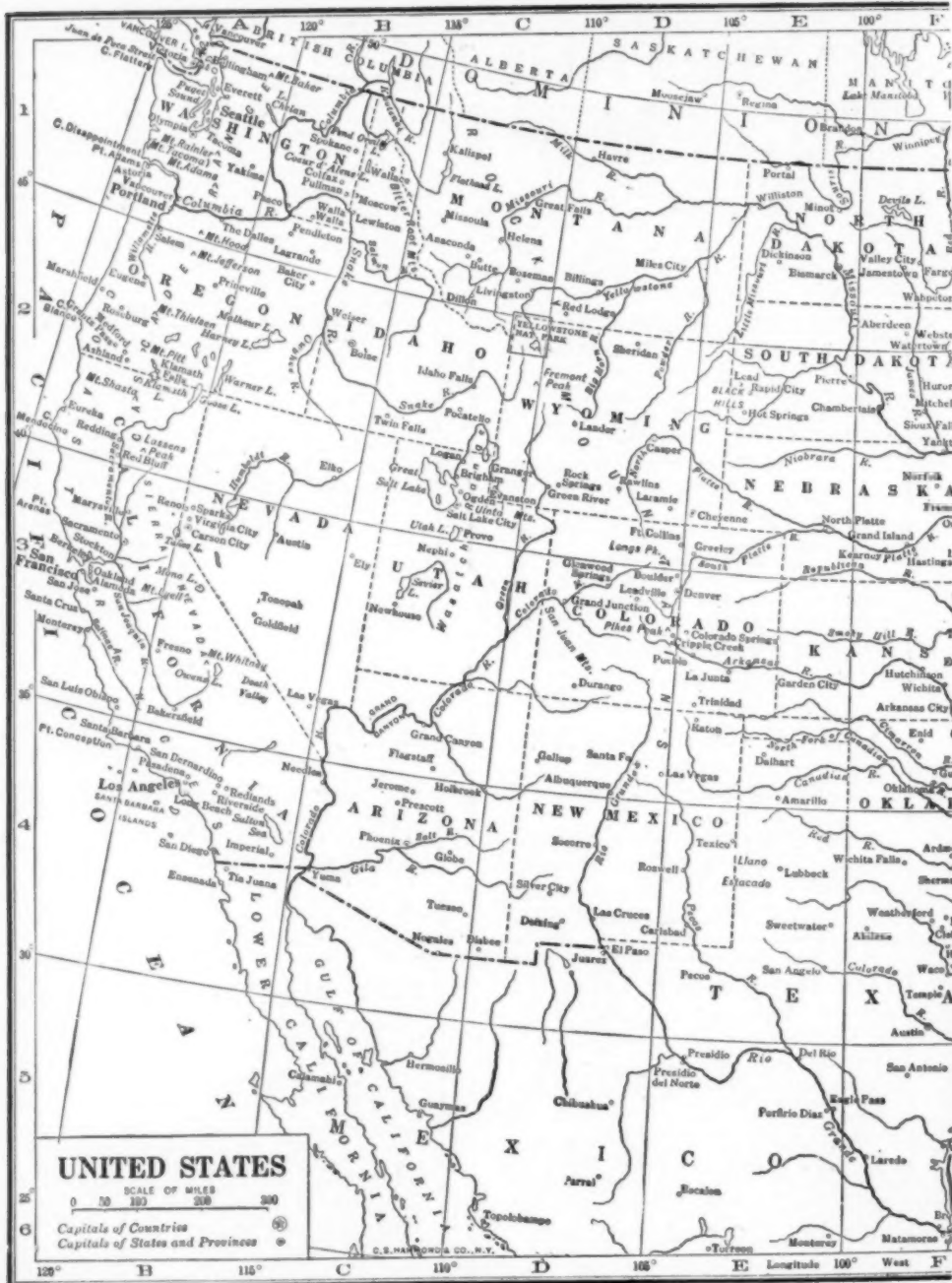
829 Folsom Street, San Francisco, Calif.

Representing:

T. L. SMITH COMPANY—Concrete Mixers &
Pavers (S. F. Territory)
CLIMAX ENGE. CO.—Industrial Gas Engines
CURTIS PNEUMATIC MACHINERY CO.—Com-
pressors, Hoists, Trolleys
CUSHMAN MOTOR WORKS—Gas Engines
UNIVERSAL MOTOR CO.—Gas Engines
CONCRETE SURFACING MACHY. CO.—Con-
crete Surfacers and Finishers. (L. A. Territory)
DEMING PUMP COMPANY—Pumps
HUMPHREYS MFG. CO.—Power Pumps
RALPH B. CARTER CO.—Diaphragm Pumps

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

The geographical location of any distributor whose address appears in this directory may be found by consulting this map.



This is a detailed black and white map of the Eastern United States and parts of Canada. The map shows state and provincial boundaries, major cities, and geographical features. Key elements include:

- Geographical Features:** The Great Lakes (Superior, Michigan, Huron, Erie, Ontario) are prominent in the north. The Gulf of Mexico is at the bottom. The Appalachian Mountains run along the eastern coast.
- States and Provinces:** Labeled states include Minnesota, Wisconsin, Illinois, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Georgia, North Carolina, South Carolina, and Virginia. Canadian provinces like Ontario, Quebec, and New Brunswick are also shown.
- Cities:** Numerous major cities are marked, including Minneapolis, St. Paul, Chicago, St. Louis, Kansas City, New York, Philadelphia, Baltimore, Washington, and New Orleans.
- Water Bodies:** The Great Lakes, Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and the Gulf of Mexico are clearly delineated.
- Map Details:** The map includes latitude and longitude markings. It also shows smaller features like rivers, smaller cities, and islands.

Collins-Kay Machinery Co.

438 E. 3rd St. Los Angeles, Cal.
 Bay City Fdry. & Mach. Wks., Gasoline Truck
 Cranes.
 Clark Tractor Co., Truclifts and truo-
 tractors.
 Erie Steel Const. Co., Clamshell buckets and
 aggregators.
 Fate-Roth-Heath Co., Gasoline Locomotives.
 Koppel Sales Co., Cars and rails.
 J. S. Mundy Hoisting Engine Co., Steam, Electric
 and Gasoline hoists.
 Northwest Engr. Co., Gasoline & full Diesel
 shovels, draglines and cranes.
 Northern Engr. Wks., Electric traveling cranes.
 Deister Concentrating Co., LEAHY No-Blind
 vibrating screens and concentrators.

Essick and Company

1928 Santa Fe Avenue
 Los Angeles, Calif.

Representing

NOVO ENGINE COMPANY
 LAKEWOOD ENGINEERING CO.
 C. D. EDWARDS MFG. CO.
 STANDARD STEEL WORKS
 PEEBLES MACHINERY CO.
 IDEAL CONCRETE MACHY. CO.

Concrete Machinery & Supply Co.

2014 Santa Fe Ave., Los Angeles, Calif.
 Construction and Industrial Equipment

Box Pavers
 Butler Bins and Batches
 Williams Buckets
 Rex Concrete Mixers
 National Hoists
 Archer Hoist Tower & Spouting
 Blystone Plaster and Mortar Mixers
 Concrete Pipe Forms
 Orion Cranes & Shovels
 Continental Engines
 National Pile Hammers
 Le Roi Engines
 Red Star Wheelbarrows and Carts
 Conneaut Shovels
 Domestic Pumps

Member: Associated Equipment Distributors

GARLINGHOUSE BROS.

2044 Santa Fe Ave., Los Angeles, Calif.

Southern California Distributors For:

Blaw-Knox Co.—Steel Forms, Road Building
 Equipment
 Dobbie Fdy. & Mach. Co., Derricks
 Insley Mfg. Co.—Concrete Placing Equipment,
 Excavators
 Domestic Eng. & Pump Co.—Pumps, Compressors,
 Engines
 Smith Engineering Wks.—Crushers and Gravel
 Plant Equipment
 The Knekerbocker Company—Concrete Mixers
 and Saw Rigs
 Orr & Sembower, Inc.—Hoists and Boilers
 McKiernan-Terry Drill Co.—Pile Hammers
 Atlas Engineering Co.—Conveyors
 Telephone, AXridge 1234

**Construction Machinery Co.
of California**

455 E. 3d St. Los Angeles, Calif.

American Saw Mill Machinery Company
 Sagen Derrick Company
 Construction Machinery Co., Waterloo, Iowa
 Sidney Steel Scraper Co., Barrows only
 Indiana Rolling Mills Shovels
 Cresson Morris Company
 Silver Manufacturing Company
 Associated M't's. Gas Engines
 Norris E. Davis Company

Smith-Booth-Usher Co.

Los Angeles San Francisco
 228-238 Central Ave. 50-60 Fremont St.

Distributors for

Barber-Greene Co.
 Thew Shovel Co.
 Clyde Iron Works Sales Co.
 Milwaukee Locomotive Mfg. Co.
 Sauerman Brothers Co.
 Buda Co.
 Goulds Mfg. Co.
 Hercules Gas Engine Co.
 Lincoln Electric Co.
 Barber Asphalt Co.
 Owens Bucket Co.

"Special Priced Catalog on request."

Member: Associated Equipment Distributors

**The Contractors Equipment
Company Inc.**

1910-1920 Santa Fe Ave., Los Angeles, Calif.

REPRESENTING

Acme Road Machinery Co.
 The Foote Co., Inc.
 The Freeman Manufacturing Co.
 Hercules Motors Corp.
 Indiana Rolling Mill Co.
 The Jaeger Machine Co.
 O. S. Johnson Co.
 Brown Hoisting Machy. Co.
 Mandt Co.
 Maad-Morrison Manufacturing Co.
 Pioneer Bucket Co.
 Geo. D. Whitcomb Co.
 Ward Plow Co.
 O. K. Clutch & Machinery Co.

EDWARD R. BACON COMPANY

CONSTRUCTION  EQUIPMENT

Folsom at 17th St.

San Francisco

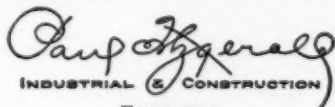
Acme Gasoline Rollers	Mead Morrison Grab
Adams "Leaning	Buckets and Hoists
Wheel" Graders	Lakewood Chuting
Ord Conc. Rd. Finishers	Traylor Crushers
Barnes Road Pumps	Whitcomb Locomotives
Burch Stone Spreaders	Pioneer Back-Dump
Byers Cranes and	Buckets
Truckcranes	McKiernan-Terry Pile
Multifoote Road Paven	Hammers
Hercules Power Units	Freeman Turntables
Johnson Batch Hoppers	Easton Industrial Cars
Jaeger Concrete Mixers	Oakland
Sacramento	Fresno

Member: Associated Equipment Distributors

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

ENGINEERING PRODUCTS CO.

RIALTO BUILDING SAN FRANCISCO

*Representing***CLARK CAR COMPANY
SEATTLE FROG & SWITCH COMPANY****INDUSTRIAL, QUARRY AND
CONTRACTORS
CARS AND TRACK****RAIL — FROGS — SWITCHES
TRACK MATERIALS****LONDON CONCRETE MACHINERY
CO. LTD.****LONDON,****CANADA***Representing:***Aurora Centrifugal Pumps,
Humphrey High Pressure Pumps,
Novo Gasoline Engines,
Archer Tower Equipment.
Concrete Mixers,
Hoisting Engines,
Concrete Block Machines,
Cement Brick Machines.****Everything for the Contractor.****HARRON, RICKARD & McCONE CO.****139 Townsend St. 2205 Santa Fe Ave.
San Francisco, Calif. Los Angeles, Calif.****REPRESENTING****American—Hoists & Derrick
Beach—Portable Saws
Beane—Hand Hoists
Blaw-Knox — Buckets, Steel
Forms, Bins
C. H. & E.—Hoists, Pumps,
Saws, Mixers
Handy—Sack Cleaners, Balers
Ingersoll-Rand — Compressor
& Drills
Keystone—Power Shovels
Kwik-Mix—Mixers****Kochring — Shovels, Cranes,
Draglines, Pavers, Mixers
LeRoi—Power Units
Littleford—Asphalt Equipment
Parks—Portable Woodworking
Machinery
Sterling—Wheelbarrows & Carts
Vulcan—Locomotives
Vulcan-Warrington—Pile Driv-
ing Hammers
Wyoming—Red Edge Shovels****THE BURNITE MACHINERY CO., Inc.****515 BOSTON BLDG. DENVER, COLO.***Representing***T. L. Smith Company, Concrete Mixers and Pavers
Smith Engineering Works, Crushers and Screening Plants
Parsons Co., Trench Excavators and Backfillers
Union Iron Works, Pile Drivers and Grout Mixers
Mead-Marrison Co., Hoists and Tractors
Orion Crane & Shovel Co., Locomotive, Truck Cranes, etc.
Geo. Hales Mfg. Co., Truck Loaders and Conveyors
Archer Iron Works, Concrete Chuting Equipment
Barnes Mfg. Co., Portable Pumps and Compressors
Northwest Engr. Co., Crawler Cranes, Shovels and Draglines
Elgin Sales Corp., Elgin Pickup Street Sweepers
Lesch Company, Portable Saw Rigs
Erie City Iron Works, Boilers, Engines, Coal Pulverizers
Wheeler Condenser & Engr. Co., Condensers and Cooling Towers
The Permutt Co., Water Softeners and Filters
The Hite Co., Turbine Tube Cleaners****RANSOME AND McCLELLAND Inc.****824 Monadnock Building
San Francisco, Calif.***Representing***Ransome Concrete Machinery Co.
Mixers, Pavers, Towers, Spouting****Novo Engine Co.
Engines, Hoists, Pumps, Compressors****Blaw-Knox Co.****Steel Forms, Clamshell Buckets, Batcher Plants****National Hoisting Engine Co.****Steam Pile Hammers
Steam Hoists****Clinton and Held Co.***Distributors***1501-1511 Wazee St., Denver, Colo.****Caterpillar Tractors****Stockland Road Machinery Company—Graders****Union Iron Works—Snow-plows****Ransome Concrete Machinery Co.—Mixers and
Pavers****La Plant-Chaste Mfg. Co.—Trailers****Baker Mfg. Co.—Scrappers****Killefer Mfg. Co.—Rotary Scrappers****Austin Machinery Corp.—Trenchers****Brown, Fraser & Co., Ltd.****Vancouver British Columbia, Can.***Equipment for***Contractors, Loggers, Municipalities,
Mines, Railroads and
Industrial Plants***Representing***Russell Road Machinery - Cletrac Tractors****EQUIPMENT****U.S. NATIONAL BANK BLDG.
DENVER, COLO.****P. & H. Shovels, Cranes,
Draglines, Trench Machines,
Northern Portable and Sta-
tionary Conveyors,
Plymouth Gasoline Loco-
motives
Archer Steel Tower and Con-
crete Distributing Systems.
Gwm Chaswell Buckets.****Ohio Locomotive Cranes,
Erie Aggre-meter Plants,
McKiernan-Terry Pile Ham-
mers,
Gruendler Crushing and
Screening Plants,
Highway 2-4-6-8 Wheel Trail-
ers,
Page Dragline Buckets.**

H. W. Moore Equipment Company

Construction Machinery
 Fordson Power Equipment
 Earth Handling and Road Building Machinery

Sixth and Acoma Streets, Denver, Colorado

Gallon Iron Wks. & Mfg. Co. The Mundle Manufacturing Co.
 Lakewood Engineering Co. Ward Flow Co.
 Jaeger Machine Co. Sargon Derrick Co.
 Bay City Dredge Works The Heitzel Steel Form & Iron Co.
 Marion Steam Shovel Co. National Hoisting Engine Co.
 Barnes Manufacturing Co. Universal Crane Co.
 Geo. D. Whitcomb Co.
 Hercules Motors Corp.

Member of Associated Equipment Distributors

Crum Machinery Corporation

Main and 14th Street

JACKSONVILLE

FLORIDA

REPRESENTING

The Hadfield-Penfield Steel Co., One-Man Graders, Crawlers, Scrapers, Road Rollers.

Jaeger Portable Power Corp., "Fyr-Foe" Pumpers, Woodworkers and Power Take-Off.

THE HERBERT N. STEINBARGER CO.
CONSTRUCTION EQUIPMENT

1640-1646 Wazee St., Denver, Colo.

DISTRIBUTORS

Buoyon Steam, Gas and Electric Shovels and Draglines
 Vulcan Steam and Gasoline Locomotives
 Clyde Hoists and Derricks
 Russell Graders, Scrapers, Gravel Handling Equipment
 Sauerman Power Scrapers, Cableway Excavators
 Stephens-Adams Gravel Washing Scraper, Conveyors
 Domestic Pumps and Air Compressors
 Rex Concrete Pavers, Building Mixers
 Stewart Tilting Concrete Mixers
 Symons Plaster and Mortar Mixers
 Symons Column Clamps, Adjustable Shores
 Buffalo-Springfield Steam and Gasoline Rollers
 Evinrude Centrifugal and Pressure Pumps
 Archer Concrete Distributing Systems
 Other Accessory Lines

Member: Associated Equipment Distributors

FRED A. LONG

223 Graham Bldg., Jacksonville, Florida

Distributor

LEACH MIXERS AND PAVERS
 HELTZEL STEEL FORMS
 BARNES PUMPS
 NORTHERN CONVEYORS
 ACME ROAD MACHINERY
 IDEAL CONCRETE BLOCK MACHINERY
 "OK" HOISTS
 FULLER-JOHNSON ENGINES

Stock Carried in Jacksonville

Wilson Machinery Company

Construction Machinery

1936 Market Street Denver, Colorado

Representing

Archer Iron Wks. Construction Mch. Co.
 Austin-Western Road Hell Co.
 Machinery Co. Heiler Locomotive Co.
 Barber-Greene Co. Koehring Co.
 Buckeye Traction Marshall-Wells Co.
 Ditcher Co. Mundy Hoist. Eng. Co.
 Butler Mtn Co. Page Engineering Co.
 Byers Machine Co. Waukesha Motor Co.
 C. H. & E. Mfg. Co. Western Wheeled
 Cleveland Wheelbarrow Scraper Co.
 Co. G. H. Williams Co.

McDONALD & BURGMAN

Jacksonville, Daytona, West Palm Beach, Miami, Florida

Distributors of Dependable Machinery

"Caterpillar" Tractors
 Austin Western Road Machinery
 Erie Gas-Air and Steam Shovels
 Universal Cranes
 Plymouth Locomotives
 Williams Clamshell Buckets
 Le Plant-Chaste Tractor Trailers & Bulldozers
 Bonney Loaders
 Iowa Crushing & Screening Plants
 D-A Lubricant for Tractors

If it's dirt moving equipment you need, we can furnish it from stock.

Member: Associated Equipment Distributors

The K. B. NOBLE CO.**REPRESENTING AMONG OTHERS**

RUSSELL: Graders
 EASTON: Industrial Equipment.
 HAISS: Loaders, Conveyors.
 LEROI: Power Units.
 "MASTER": Woodworkers.
 NATIONAL: Hoists.
 OWEN: Clamshell Buckets
 PULSOMETER: Steam Pumps.
 "REX": Mixers, Pavers.
 SARGENT: Derricks.
 JONES: Super Woodworkers
 SULLIVAN: Compressors, Drills.
 UNIVERSAL: Crushers, Bins, Rts.
 BOX: Electric Hoists.
 "SUPERIOR": Saw Rigs.
 "HERCULES": Engines.

Member: Associated Equipment Distributors.

HARTFORD, CONNECTICUT

Stanley & Gill Machinery Co.

760 West Bay Street
 JACKSONVILLE, FLA.

REPRESENTING:

VENN-SEVERIN MACHINE CO.—Semi-Diesel Oil Engines
 DOMESTIC ENG. & PUMP CO.—Pumps, Hoists
 PENNSYLVANIA CRUSHER CO.—Steel Roll Rock Crushers
 F. E. MYERS & BROS.—Bulldozer Pumps
 INGERSOLL-RAND, INC.—Compressors and Rock Drilling Equipment
 WESTINGHOUSE ELECTRIC & MFG. CO.—Generators and Motors
 RANSOME CONCRETE MIXERS
 ELECTRIC LIGHT, WATER and ICE PLANT INSTALLATION

LARGE STOCKS CARRIED IN JACKSONVILLE

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

L. D. LLEWELLYN, INC.
MIAMI FLORIDA

REPRESENTING:

American Mfg. Co.
American Saw Mill Machy. Co.
American Steel & Wire Co.
Anchor Concrete Mach. Co.
Archer Iron Works
Austin-Western Rd. Mach. Co.
Baylor-Greene Co.
Blystone Mfg. Co.
Chicago Pneumatic Tool Co.
Cleveland Wheelbarrow & Mfg. Co.
Denver Rock Drill Mfg. Co.
Electric Welding Co.
Erie Steel Const. Co.
Fairbanks, Morse & Co.
Hercules Corp.
Independent Pneumatic Tool Co.
Jaeger Machine Co.
Jackson Mfg. Co.
Jeffrey Mfg. Co.
Wm. H. Keller, Inc.
Mathews Conveyor Co.
Metal Forms Corp.
Page Engineering Co.
Northwest Eng. Co.
Novo Engine Co.
Rochester Can Co.
Sasgen Derrick Co.
Schramm, Inc.

Member: Associated Equipment Distributors

R. S. ARMSTRONG & BRO. CO.
676 Marietta St. Atlanta, Ga.

New Equipment in Stock

Archer Hoist Tower Equipment
Chicago Air Compressors
Hercules Gasoline Engines
LeRoi Gasoline Engines
Jaeger Concrete Mixers
Klieberbocker Concrete Mixers
Lidgerwood Hoists
Stroudsburg Hoists
Lookout Vertical Boilers
Bar Benders, Bar Outters, Hoist Tower Outfits,
Pumps, Saw Rigs, etc.

Large stock of rebuilt machinery

RENTAL SERVICE

"YOU CAN GET IT AT ARMSTRONG'S"

D. E. FISHBACK
ORLANDO FLORIDA

DISTRIBUTOR

Fairbanks-Morse & Co., Oil Engines, Pumping Machinery, Electric Motors, Home Light and Water Plants.
The Jaeger Machine Co., Concrete Mixers for every purpose.
Cincinnati Rubber Co., Dredging Sleeves, Suction and Discharge Hoses.
O. K. Clutch & Mach. Co., Hoisting Machinery.
American Saw Mill Mach. Co., Portable Woodworkers, Saw Benches, Etc.
Gould's Pumps, Inc., Power, Diaphragm and Hand Pumps.
Cement Block Mach. Co., "National" Concrete Block Machines.
Chicago Pneumatic Tool Co., Portable and Stationary Air Compressors, Air Lift Pumps, Etc.
Pipe, Valves and Fittings.

STOCK CARRIED IN ORLANDO

W. E. AUSTIN MACHINERY COMPANY
128 Marietta St., Atlanta, Ga.

Contractors' Machinery

for the building of

HIGHWAY, RAILWAY, MINE, QUARRY,
AND GENERAL CONSTRUCTION WORK

REPRESENTING

Anco Roofing Tile Huber Mfg. Co.
Insley Mfg. Co. Kent Machine Co.
National Hoist. Eng. Co. Anchor Concrete Mch. Co.
AUSCO Concrete Mixers Co.
Fate-Root-Heath Co. Sasgen Derrick Co.

Member: Associated Equipment Distributors

BURRESS-CLARK MACHINERY CO.

Tampa, Florida

EXCLUSIVE DISTRIBUTORS FOR:

Chain-Belt Co., Rex Mixers
Street Bros., Gas, Steam & Electric Hoists
Street Bros., Derricks and Cableways
Barnes Mfg. Co., Power Pumps
Ingersoll-Rand Air Compressors
Speeder Shovels and Cranes
Lakewood Engine Co., Chuting Equipment
H. W. Roos Co., Rooshors
Jones Superior Saw Rigs
Haiss Loaders
Sasgen Derricks, Winches, etc.
Blystone Mfg. Co., Plaster & Batch Mixers

COMPLETE STOCK IN TAMPA

Member: Associated Equipment Distributors

COULTER-HART EQUIPMENT CO.Equipment for Contractors and
Road Builders

506-8 Stewart Avenue ATLANTA, GA.

Branch Offices and Warehouses

Jacksonville, Fla. West Palm Beach, Fla.
Tampa, Fla. Miami, Fla.

Representing

Koehring Co. Blaw-Knox Co.
Barber-Greene Co. C. H. & E. Mfg. Co.
Nat'l Hoist. Eng. Co. Remmel Mfg. Co.

EDGAR ALEXANDER

905-6 Fourth National Bank Bldg., Atlanta, Ga.,

Representing

The T. L. Smith Co., Concrete Mixers and Pavers.
Orion Crane & Shovel Co., Cranes, Excavators, Shovels.
Jones Superior Woodworker, Saw Equipment.
Universal Road Machinery Co., Roll-over Crushers, Street Sweepers, Oilers, Car Unloaders, etc.
Heltzel Steel Form & Iron Co., Steel Forms for concrete work.
Buffalo-Springfield Roller Co., Kelly-Springfield Rollers.
Littleford Brothers, Littleford Tar and Asphalt Hoppers.
George Haise Mfg. Co., Truck Loaders, Portable Belt Conveyors, etc.
Archer Iron Works, Concrete Mixers and Cuts.
Bay City Dredge Works, Motor Cranes, "One-Man Excavators."
Climax Engineering Co., Internal Combustion Engines.
Beach Manufacturing Co., Saw Tables.
Kerner Incinerator Co., Incinerators for Houses and Institutions.
Blystone Manufacturing Co., Concrete and Plaster Batch Mixers.
M. & M. Form Clamp Co., Column Clamps

SOUTHEAST SUPPLY COMPANY213 GLENN BUILDING
ATLANTA, GEORGIA

Representing:

Cleveland Tractor Company
Euclid Crane & Hoist Company
Austin-Western Road Machy. Co.

YANCEY BROTHERS

550-556 Whitehall St. Atlanta, Ga.

"Caterpillar" Tractors
Adams Graders
Baker Maney Self-Loading Four
Wheel Scrapers
Wheel and Drag Scrapers
Red Edge Shovels
Dump Wagons & Trailers
Red Star Wheelbarrows
Contractors Plows
Waukesha & LaRoi Engines
Koppel Cars & Truck
Freeman Truck Turntables
Hvass Street Flushers, Sweep-
ers and Asphalt Plants
Rex Concrete Mixers & Pavers
La Plant-Chaste Tractor Dump
Wagons, Scrapers, etc.
P & H Shovels & Cranes
Ord Cons. Finishing Machines
McKiernan-Terry Pile Ham-
mers, etc.
Killefer Road Rippers, Rotary
Scrapers
Barnes Pumps
Mundy Hoists
Williams Clamshell Buckets
Vulcan Industrial Locomotives
Acme Rollers & Crushers
Helschies Steel Forms
Johnson Material Bins & Hoppers
Schramm Air Compressors

MEMBER ASSOCIATED EQUIPMENT DISTRIBUTORS

Dravo Equipment Company

611 Fulton St. Chicago

REPRESENTING:

Marsh Capron Concrete Mixers
Saggen Derricks
Johnson Bins and Hoppers
Red Star Wheelbarrows, Carls, Batch
Boxes and Coal Chutes
Barnes Pumping Units
Superior Saw Rigs
Williamsport Wire Rope
American Tubular Elevators
Acroll Heaters and Torches
Mead-Morrison Hoists, Cranes & Buckets
LeRoi, Stever and Continental Engines.

A. B. MOORE, JR.

Arcade Bldg. Savannah, Ga.

REPRESENTING

Lakewood Engineering Company
Holtzel Steel Form & Iron Co.
Easton Car & Construction Co.
Barber-Greene Company
Northwest Engineering Co.
Buffalo Springfield Roller Co.
Domestic Engine & Pump Co.
Sterling Wheelbarrows
Wyoming Shovels
Automatic Signal & Sign Co.
Redflex Warning Signals Co.

**EVERYTHING
IN CONTRACTORS' EQUIPMENT****ENGINEERING PRODUCTS COMPANY**

Arthur Prausnitz, Pres. Carl J. Gregersen, Secy.

Peoples Gas Bldg., Chicago, Ill.

**RAILS — FROGS — SWITCHES
TRACK — MATERIALS
RAIL BENDERS,, etc.**

REPRESENTING

EASTON Car & Construction Co.
Industrial — Quarry and Constructor's CARS.

S. Flory Mfg. Co.
Electric, Steam and Gasoline Hoists
for all purposes.

BAKSTAD MACHINERY CO.**ENGINEERING and SALES**

Peoples Gas Building Chicago, Ill.

REPRESENTING:

CHAUSSE OIL BURNER CO.
Portable Asphalt Patching Plants, Tool and Surface Heaters,
Hand Torches, Tar Kettles, Crack Fillers, Lead Melters,
Self Heating Smoothing Irons, Squeezers.
UNIVERSAL ROAD MACHINERY CO.
"Reliance" Crushers, Screens, Elevators, Conveyors, Car
Unloaders, Portable Gravel, Screening Plants, Chip Spreaders.
N. P. NELSON IRON WORKS
Nelson-Fordson Material Loaders, Wheel Mounted, Crawler
Type, Batch Hopper, Coal Screens, Snow Loaders.
SPECIALIZING:
Sand and Gravel Washing Plant Design, Equipment and
Construction.

R. H. HYLAND CO.

221-225 W. Huron St.

Chicago, Ill.

Exclusive Representative

Leech Concrete Mixers and Saw Rigs
McKiernan-Terry Pile Hammers
Insley Steel Towers and Chutes
Norton Ball Bearing Jacks
Wyoming "Red Edge" Shovels
Eric Clam Shell Buckets
Clyde Hoisting Engines
Barnes Pumping Outfits
Sullivan Air Compressors
M & M Form Clamps
Easick Plaster Mixers
Member Associated Equipment Distributors

DOLAN—TUCKER—SMITH**Equipment and Supply Co.****REPRESENTING:**

McMyler Interstate Co.
International Clay Mch. Co.
Hear Shovel Co.
Cars
Cranes
Shovels
Drag Lines
Pavers
Roll

723-4 Monadnock Bldg., Chicago

W. B. LOUER COMPANY**Construction Equipment**

1512 S. Michigan Ave. Chicago, Illinois

D-A Lubricant Co., Inc.
Berg Concrete Surfacing Machines.
"Caterpillar" Tractors.
Hercules Power Units.
Knickerbocker Conc. & Mortar Mixers, Saw Rigs.
High-Grade Pumping Equipment.
LaPlant-Chaste Dump Wagons, Scrapers, Bul-
ldozers, etc.
Wausau Snow Plows.
LeRoi Gasoline Engines.
MultiFoots Paving Mixers.
National Hoisting Engines.
Owen Clam-Shell Buckets.
Archer's Hoist Tower Outfits.
Phones, Michigan 1180-1131. Send for Catalogue.
Member: Associated Equipment Distributors

U. B. McCURDY

2025 So. Michigan Ave., Chicago, Ill.

REPRESENTING

Cleveland Tractor Co.—
Tractors
Euclid Crane & Hoist Co.—
One-Man Wheelers
Maccar Co.—
Crawler Trucks
Perry Co.—
One-Man Fresno

SUPERIOR SUPPLY COMPANY

327 SOUTH LA SALLE STREET, CHICAGO

DISTRIBUTORS

Navs Engine Company	Metal Form Corporation
Chain Belt Company	Freeman Manufacturing Co.
Butler Bin Company	Milwaukee Locomotive Man-
Bain Wagon Company	ufacturing Company
The Huber Manufacturing	Orion Crane & Shovel Co.
Company	G. H. Williams Company

A Complete Line of Construction Tools
and Equipment Carried in Chicago.

TELEPHONE HARRISON 7616

Western Contractors Supply Co.

14 No. Clinton St. Chicago

Distributors

Domestic Engine & Pump Co.
Pumps, Hoists, Engines, Air Com-
pressors.
Wiard Plow Co.
Contractors' Plows.
Haggard & Marcusson Co.
Camp Bunks, Cots.
Complete Equipment and Supplies
Member: Associated Equipment Distributors

E. W. JOHNS EQUIPMENT COMPANY1205 First National Bank Bldg.
FORT WAYNE, IND.**NORTHERN INDIANA DISTRIBUTORS****Representing**

American Cement Machinery Co.	Boose Tilting and Non Tilting Mixers, Hoists and Pavers.
Byers Machine Co.	Bear Cat Cranes and Excavators, Truckcranes, Full Revolving Cranes.
Chicago Automatic Conveyor Co.	Material and Coal Conveyors.
F. E. Myers & Bro. Co.	Bull Dozer Pumps
Derrieks	Gas Engines
	Saw Rigs

GEO. W. FIFE EQUIPMENT CO.1612 Merchants Bank Bldg.
INDIANAPOLIS, IND.**State Representative**

T. L. SMITH CO.
Tilting and Non-tilting Concrete Mixers and
Road Pavers.
INSLEY MANUFACTURING CO.
Concrete Chuting Plants, Steel Derrieks, and
Excavators.
CHICAGO AUTOMATIC CONVEYOR CO.
Conveyors.
MEAD-MORRISON MFG. CO.
Hoisting Engines, Clam-Shell Buckets.
ELGIN SALES CORP.
Street Cleaning Equipment.

Knox Engineering and Equipment Co.

Road Building Machinery and Contractors' Sup-
plies, Car Loaders and Unloaders, Cranes, Hoists
and Boilers.

207-208 Empire Life Building, Indianapolis, Ind.

REPRESENTING

Smith Engineering Works
Bay City Dredge Works
Ideal Concrete Mch'y. Co.
Jeffrey Mfg. Co.
Evinrude Motor Co.
Orr & Semberow, Inc.
Koppel Car Works
Advance Foundry Co.
Doister Concentrator Co.
Carr Fastener Company
(DOT LUBRICATOR)

GIERKE-ROBINSON COMPANY

Distributors of Contractors' Equipment
Suite 304, Kahl Bldg.,

DAVENPORT, IOWA

SMITH—Concrete Mixers and Pavers.
AUSTIN—Trenching Machines, Back- fillers.
BLAW-KNOX—Steel Road Curb Gutter Forms, Steel Storage
Bins, Baskets, Clam Shell Buckets, Truck Turntables.
CLYDE—Gasoline Builders Hoists, Steam Hoists, Derrieks.
BARNES—Triplex and Quadruplex Road Builders Pumps.
ORD—Concrete Road Surfacers.
Wheelbarrows, Slips, Wheel Scrapers, Fresno, Gas and Steam
Rollers, Rock Crushers, Graders, Wire Ropes, Hoes, NORTH-
WEST Cranes, Power Shovels and Draglines, SULLIVAN Air
Compressors, Air Tools, etc.

POWER EQUIPMENT COMPANY

1723-25 GRAND AVENUE, DES MOINES, IOWA

REPRESENTING:

Schramm, Inc., Compressors	Full-Crawler Co., Crawlers
Ruckstell Sales & Mfg. Co.,	Ernst Machinery & Mfg. Co.,
Ruckstell Axles	Hoists
Lessman Loader Co., Lessman	Williams Iron & Steel Co.,
Loaders	Hoists
Hughes-Kennan Co., Dump	Wehr Co., Graders
Bodies	The Perry Co., Fresno Scrapers
Anthony Co., Dump Bodies	Miami Trailer Scaper Co.,
Whitehead & Kales Co., Cranes,	Wheel Scrapers
Rubber Tractor Wheels,	The Trailmobile Co., Tractor
Street Flushers	Trailers
Ohio Concrete Mixer Co., Con- crete Mixers	O. B. Wise Pulverizer Co., Crushers, Pulverizers
Hadfield-Penfield Steel Co.,	Brookville Truck & Tractor Co.,
Graders, Crawlers	Locomotives

THOMAS L. BARRET

Contractors' Equipment
LOUISVILLE, KY.

REX Mixers and Pavers.
KENNEDY Gearless Crankers.
WILLIAMS Clam Shell Buckets.
ARMSTRONG Blast Hole Drills.
HAISS Material Handling Equipment and Loaders.
MUNDY Hoisting Equipment.
RUSSELL Road Equipment.
UNION Hammers and Concrete Buckets.
TRIANGLE and Welded Mesh.
CORRUGATED Bars.
BARRET Asphalt Expansion Joint.
VULCAN IRON WORKS, Steam & Gas Locomotives.
JOHNSON Bins and Measuring Hoppers.
HUG Trucks, Turntables and Subgraders.
METAFORM Road Rail, Etc.

A. M. Lockett & Co., Ltd.

Queen & Crescent Bldg., New Orleans, La.

Representing

Construction Specialties Co.
Universal Road Machine Co.
Harnischfeger Corporation
Williamsport Wire Rope Co.
Robins Conveying Belt Co.
O. K. Clutch & Machine Co.
C. S. Johnson Company
T. L. Smith Company
Huber Mfg. Co.

Brandels Machinery & Supply Co.

325 W. Main St., Louisville, Ky.

Representing:

J. D. Adams & Co.	Ingersoll-Rand Co.
Barber-Greene Co.	Inley Mfg. Co.
Bosch Manufacturing Co.	LeROI Co.
Blaw-Knox Co.	A. Leebach & Sons Rope Co.
Buffalo-Springfield Roller Co.	McKiernan-Terry Drill Co.
A. B. Cameron Steam Pump Works.	Saugen Derrick Co.
Climax Engineering Co.	Sawerman Bros.
Domestic Engines & Pump Co.	T. L. Smith Co.
Erie Steam Shovel Co.	Smith Engineering Works
A. B. Farquhar Co.	Sterling Wheelbarrow Co.
A. W. French & Co.	Clyde Iron Works
Fate-Rock-Henth Co.	Rex-Watson Corp.
Cyclone Fences Co.	Western Wheeled Scraper Co.
Wood Shovel & Tool Co.	Nordberg Mfg. Co.
	Littleford Bros.

Member: Associated Equipment Distributors

LOUISIANA ROAD MACHINERY COMPANY

NEW ORLEANS LOUISIANA

Representing:

Jaeger Machine Co.—Concrete Mixers and Pavers.
Speeder Mach. Corp.—Auto-Cranes and Draglines.
Elgin Sales Corp.—Street Sweepers and Eductors.
Eagle Dump Wagons.
Russell Grader Manufacturing Company.
Buffalo-Springfield Roller Company.
Cyclone Fence Co.
Universal Rock Crusher Company.
Lyle Culvert & Road Equip. Co.

ROY C. WHAYNE SUPPLY CO.

Opposite City Hall—608 W. Jefferson St.

LOUISVILLE, KY.

Best and Holt "Caterpillar" Tractors
Koshing Shovels, Cranes, Pavers
Jaeger Concrete Mixers
Heltsel Steel Forms
Byers "Bear Cat" Excavator
Stockland Road Graders
Barnes Pumps
Sullivan Compressors, Drills, etc.
Flory Hoists, Cableways, etc.

CONSTRUCTION EQUIPMENT OF ALL KINDS

Member: Associated Equipment Distributors

OLE K. OLSEN

822 Perdido St. New Orleans

REPRESENTING:

Ransome Con. Mach. Co.	Atlanta & Atlantic Terra
McKiernan-Terry Drill Co.	Cotta Co.
Amer. Cement Mach. Co.	Wyoming Shovel Works
Amer. Saw Mill Mach. Co.	Blaw-Knox Co.
National Hoisting Eng. Co.	Patent Scaffolding Co.
Northwestern Expanded Metal Co.	Universal Form Clamp Co.
Concrete Steel Co.	Atlas Engineering Co.
Trascon Laboratories	Elystone Mfg. Co.
Dahlstrom Metallic Door Co.	LeROI Co.
Price Evans Foundry Co.	Cleveland Wheelbarrow Co.
Ralph B. Carter Co.	H. W. Ross Co.
	Amer. Steel & Wire Co.

Member: Associated Equipment Distributors

The CLYDE COMPANY, Inc.

309 MAGAZINE ST.

NEW ORLEANS, LA.

Reed-Bench Saw Rigs.	Wood Molybdenum Shovels.
Clyde Hoisting Engines and Equipment.	Universal Truck Cranes.
Lakewood Concrete Mixers.	Wonder Concrete Mixers.
Northwest Crawler Cranes, Shovels, etc.	Atlas Adjustable Shores.
Ohio Locomotive Cranes.	Erie Steel Bins, Aggregators.
Sawerman Cableway Excavating Machinery.	M. & M. Form and Column Clamps.
Sterling Wheelbarrows.	Freeman Turntables.
Barnes Power Pumps.	Barber-Greene Conveyors, Loaders, Ditchers.
	Sullivan Air Compressors.

Member: Associated Equipment Distributors

Southern States Equipment Co., Inc.

718 Canal Commercial Building

NEW ORLEANS

"Erie" Steam Shovels
"Parsons" Trench Excavators and Backfillers
"Telamith" Sand and Gravel Plants
"Williams" Clam Shell Buckets
"Orr & Sembower" Hoisting Engines, Boilers and Concrete Mixers
"Foots" Paving Mixers
"Archer" Concrete Chuting
"Domestic" Pumps and Engines
"Union" File Hammers
"Koppel" Industrial Cars and Track
"Butler" Steel Bins and Measuring Hoppers

EVERYTHING FOR THE CONTRACTOR

DIXIE MACHINERY CO.

1561-3 Texas Avenue, Shreveport, La.

**WE HANDLE AND CAN MAKE PROMPT
SHIPMENT ON:**

Lakewood Engineering Company's—Concrete Pavers, Mixers, Towers, Etc.
 Northwest Engineering Company's—Shovels and Cranes.
 Sauerman Company's—Gravel Pit Equipment, Drag Line, etc.
 Mundy Hoisting Equipment—Hoisting Engines
 Dixie—Portable Tie and Saw Mills
 Southern Engine & Boiler Works—Engines and Boilers.
 Patton Builders Hoists
 C. & J. Iron Lathes.
 Sault Rotary and Twin Engines.
 Complete Irrigating Pumping Outfits.

THE HENRY H. MEYER CO.

110 S. Howard St.

Baltimore, Md.

REPRESENTING:

Austin Western Road Mach. Co.	Union Iron Works
Blaw-Knox Co.	A. Leachon & Sons Rope Co.
Boston & Luskport Block Co.	Lidgerwood Manufacturing Co.
C. H. & E. Manufacturing Co.	Novo Engine Co.
Chain Belt Company.	Parsons Co.
Cannery & Company.	Pulometer Steam Pump Co.
E. I. du Pont de Nemours Co. Inc.	Sterling Wheelbarrow Co.
Duff Mfg. Co.	Tenipston-Kelly Co.
The Harrington Co.	Universal Crane Co.
	Universal Road Machinery Co.

MEMBER OF ASSOCIATED EQUIPMENT DISTRIBUTORS.

Shreveport Machinery Sales Co.Contractors' Equipment — Saw Mill Machinery
927 Giddens-Lane Building Shreveport, La.**REPRESENTING:**

Barber-Greene Co., Ditchers, Loaders, Conveyors
 Thew Shovels, Cranes and Draglines
 Foca Engine Co., Gas & Oil Engines, 5 to 400 H.P.
 Orr and Sembower, Hoists, Steam, Electric, Gasoline, Concrete Mixers, Engines and Boilers
 Barnes Mfg. Co., Power Pumps for all purposes
 Vogt Bros. Mfg. Co., Steam Pumps, Fire Plugs
 Fuller & Johnson Mfg. Co., Farm Engines, Electric Light Plants, Pumping Outfits, Fire Pumping Units
 Tellsmith, Gravel and Quarry Plants
 Schramm, Inc., Air Compressors
 Aurora Pump Mfg. Co., Centrifugal and Deep Well Pumps, etc.

**ABERTHAW COMPANY
EQUIPMENT DIVISION**

133 Southampton St., Boston, Mass.

REPRESENTING

FLOEY Hoists & Derricks
 CONTINENTAL Red Seal Gasoline Power Units
 LEACH Concrete Mixers and Saw Rigs
 HAISS Loaders, Conveyors, Clam Shell Buckets
 SCHRAMM Compressors
 CLYDE Steel Derricks
 AMERICAN CABLE CO. Tru-lay Wire Rope
 U. S. STANDARD Concrete Block Machinery
 CARTER Open and Closed Discharge Diaphragm Pumps

EQUIPMENT FOR SALE AND RENT

THOS. M. BROWN

106 So. Gay St.

Baltimore, Md.

REPRESENTING

Koehring Company
 Concrete pavers, mixers, cranes and shovels.
 Heltzel Steel Form & Iron Company
 Road forms.
 J. D. Adams & Company
 Leaning Wheel Graders.
 Construction Machinery Co.
 Wonder mixers, hoists and backfillers.
 Keystone Driller Company
 Shovels.
 Huber Manufacturing Company
 Gasoline rollers.

THE BOND CO.

84 HIGH STREET,

BOSTON

Contractors' Tools and Equipment**Representing**

"SMITH" Mixers and Pavers	JONES "SUPERIOR" Wood workers.
"NORTHWEST" Cranes, Shovels and Drag Lines.	"SASGEN" Derricks.
"CHICAGO" Portable Conveyors.	"NOVO" Gasoline Engines, Pumps and Hoists.
"RED STAR" Barrows and Concrete Carts.	"MONARCH" Block Machines.
"ESSICK" Plaster Mixers.	"SYNTRON" Electric Hammer.
"INSLEY" Excavators and Concrete Placing Equip.	"BLACK & DECKER" Drills.

JOHN C. LOUIS

221 S. Eutaw St. Baltimore, Md.

REPRESENTING

Jaeger Machine Co.
 Barnes Manufacturing Co.
 Ideal Concrete Machinery Co.
 National Hoisting Engine Co.
 American Cable Co.
 The Fouts Co.
 Wheeling Corrugating Co.
 Good Roads Machinery Co.
 Littleford Brothers
 Hotchkiss Steel Products Co.
 Jones Superior Machine Co.
 Cyclone Fence Co.

MEMBER: Associated Equipment Distributors

C. R. DODGE COMPANY

141 Milk St.

Boston, Mass.

Representing

Koehring Company
 Russell Grader Mfg. Co.
 Heltzel Steel Form & Iron Co.
 Butler Bin Co.
 National Hoisting Engine Co.
 Littleford Brothers
 Cement Block Machinery Co.
 Kwik-Mix Concrete Mixer Co.

HEDGE & MATTHEIS CO.

The Equipment House for Contractors
Fifty Dorchester Avenue, Boston, Mass.

REPRESENTING
Jaeger Machine Company
March-Capron Company
Lawrence Pump and Engine Co.
Mead-Morrison Manufacturing Company
McKiernan-Terry Drill Co.
Lakewood Engineering Co.
Ingersoll-Rand Co.
A. Leschen & Sons Rope Co.
Anchor Concrete Machinery Company
Handy Sack Baler Company
Elystone Manufacturing Company
Barber-Greene Company
Miles Manufacturing Company
The Wood Shovel and Tool Co.
C. H. & E. Manufacturing Co.
Hotchkiss Steel Products Co.
Members: Associated Equipment Distributors

BORDEN & REMINGTON COMPANY

115 Anawan St. Fall River, Mass.

REPRESENTING:
Chain Belt Company—Rex Mixers and Pavers.
Blaw-Knox Company—Forms and Batchers.
C. H. & E. Company—Pumps.
Ingersoll-Rand Co.—Compressors.
Littleford Brothers—Tar Kettles.
Carbic Manufacturing Co.—Lights.
Hauck Manufacturing Co.—Burners.
Waukesha and LeRoi—Engines.
Sasgen—Derricks.
Ames and Red Edge—Shovels.
Atlas—Dynamite.
National Hoisting Engine Company.
Cement Block Machinery Company.
Williamsport Wire Rope Company.

P. I. Perkins Company

110 High St., Boston, Mass.

Mechanical Equipment for Power Plants,
Contractors, Industrial Plants

Byers Bearcat Cranes
Mundy Moistening Equipment
Dobbie Derricks and Fittings
Blaw-Knox Buckets, Road Forms, etc.
Pioneer Slackline Excavators

M. B. Tyler Company

54 Main Street Springfield, Mass.

Representing
Best & Holt "Caterpillar" Tractors.
Austin-Western Road Machinery.
Johnson Demountable Charging Bins.
LaPlant-Choate and Sargent Snow Plows.
Portable Air Compressors and Contractors' Equipment.

DYAR SALES AND MACHINERY COMPANY

Municipal and Contractors' Equipment and Machinery
88 BROADWAY CAMBRIDGE, MASS.

REPRESENTING
J. D. Adams & Company—Graders, Road Drags.
American Cement Machy. Co.—Concrete Mixers, Hoists.
Oliver Ames & Sons Co.—Shovels, Scoops.
Burch Plow Works—Spreaders and Unloaders.
Baker Mfg. Co.—Truck and Tractor, Snow Plows, Graders, etc.
Charles Hyatt & Co., Inc.—Sweepers, Brooms, Sprinklers, Trailers.
Asphalt Plants and Sand Spreaders.
Highway Line Markers.
Iowa Mfg. Co.—One Piece Gravel Reduction Plants, Crushers.
Klein-Logan—Pickers, Hammer, Crow Bars.
Le Roi Company—Gasoline Engines.
Link Belt Co.—Loaders, Gasoline Shovels and Cranes.
Mandl Company—Fordson Loaders.
Mead-Morrison Mfg. Co.—Tractors, Buckets.
Parsons Company—Excavators, Backfillers.
Ren-Watson Corp.—Wagons, Trailers.

W. H. ANDERSON TOOL AND SUPPLY CO.

2178 Franklin St. Detroit, Michigan

Representing
McKiernan-Terry steam hammers
Davenport locomotives
Ransome mixers, pavers and chuting equipment
Novo gasoline engines, hoists and pumping outfits
Speeder shovels, cranes
Connaut shovels and scoops
Sidney wheelbarrows and scrapers
Monarch tractors
Sargent snow plows
Haisc loaders and material handling equipment
Johnson—bins and batch measuring hoppers

W. W. FIELD & SON, Inc.

Machinists

Contractors' Equipment

39-51 Hayward St. Cambridge, Mass.

New England Representatives for the
Lambert Hoisting Engine Company
Hoists, Etc.

Metalweld Service Corp.
Air Compressors

Beattie Machinery Co.

CONTRACTORS' EQUIPMENT

1946 Baker St. Detroit, Mich.

REPRESENTING
Sullivan Machinery Co.—Compressors & Air Tools
Leach Oakkosh Co.—Mixers & Saw-rigs
Humphreys Mfg. Co.—Pumps
Le Roi Engine Co.—Engines
Sasgen Derrick Co.—Derricks
Flory Mfg. Co.—Hoists
J. H. Fauver Co., Inc.—Dot Lubricating Pressure System
Elystone Mfg. Co.—Plaster Mixers
Miles—Cement Block Machines
Chase—Industrial Cars
Rocktile—Automatic Units
Kent—Continuous Mixers
Master-trowel—Long Handled Finishers

CONTRACTOR'S EQUIPMENT COMPANY, Inc.

5169 Martin Ave. DETROIT

Representing:

CATERPILLAR Tractors.
 REX Mixers and Pavers.
 ERIE Shovels and Cranes.
 DOMESTIC Pumps and Compressors.
 ERIE Clamshell Buckets.
 SASGEN Derricks and Winches.
 HUG Road Builders' Trucks.
 WAUSAU Snow Plows.
 Steam and Gas Hoists, Conveyors, Wheelbarrows,
 Shovels, etc.

Member: Associated Equipment Distributors

Wolverine Concrete Machinery Co.

2421 Buchanan St., Detroit, Michigan

REPRESENTING

LEACH-OSHKOSH.....Mixers and Pavers
 SULLIVAN.....Air Compressors
 HUMPHRIES.....Pumps
 MASTERTROWEL.....Long-Handled Finishers
 CHASE.....Industrial Cars
 BLYSTONE.....Plaster Mixers
 ELEVATORS.....Of All Types
 KENT.....Continuous Mixers
 MILES.....Cement Block Machines
 ROCKTILE.....Automatic Strippers

CEMENT PRODUCTS PLANT MACHINERY
 GENERAL CONTRACTORS' EQUIPMENT

J. W. DOPP & CO.

CONTRACTORS' EQUIPMENT

2937 East Grand Boulevard, DETROIT, MICH.

Factory Representatives and Warehouse for
 Sterling Wheelbarrow Co.—Wheelbarrows,
 Carts, Etc.
 T. L. Smith—Pavers,
 Mixers.
 A. Leschen & Sons
 Rope Co.—Hercules
 "Red Strand" Wire
 Rope.
 Jones Superior Ma-
 chine Co.—Saw Rigs.
 Inaley Mfg. Co.—In-
 dustrial and Concrete
 Distributing Equip-
 ment, Excavators.
 Mead-Morrison Mfg.
 Co.—Hoisting En-
 gines—Steam, Gas
 Electric & Gas Cranes.
 Wyoming Shovel
 Works—Red Edge
 Shovels, Scoops, and
 Picks.

Phone, Empire 3668

Member: Associated Equipment Distributors

KELLOGG-BURLINGAME CO.

67 Market Ave., N. W. Grand Rapids, Mich.

Representing:

Rex Building Mixers and Pavers
 Novo Gasoline Engines, Hoists, Pumping Outfits
 M & M Form Clamp Co.
 Novo Drag-line Hoists
 Northwest Cranes
 Clyde Steam Hoists
 Huber Motor Road Rollers and Maintainers
 Freeman Truck Turntables
 Myers Bulldoser Pumps
 Centrifugal Pumps, Diaphragm Pumps
 Scrapers, Wheelbarrows, etc.
 Atlas Adjustable Shores
 Archer Iron Works—Towers and Sponting Equip-
 ment
 Heisler Locomotives

Member Associated Equipment Distributors

Good Roads Supply Company

Material for Machinery for
 Roads and Streets

1409 Ford Building Detroit, Michigan

American Gas Accumulator Co.
 National Hoisting Engine Co.
 Koehring Co.
 Blaw-Knox Co.
 Acme Road Machinery Co.
 C. H. & E. Mfg. Co.
 Automatic Sign & Signal Co.
 Barber-Greene Co.
 Archer Iron Works
 Universal Crane Co.
 Remmel Mfg. Co.

F. D. LAKE COMPANY

Contractors' Machinery and Tools

16 Campau Ave. N. W. near Fulton

GRAND RAPIDS, MICHIGAN

Representing

T. L. Smith Co.—Concrete Mixers and Pavers
 C. H. & E. Mfg. Co.—Portable Saw Rigs and
 Pumps
 Smith Engineering Works—Gravel Washing and
 Rock Crushing Machinery
 Northern Conveyor Mfg. Co.—Portable Conveyors
 George Haisa Mfg. Co.—Creeper Loading Equip-
 ment
 A. Leschen & Sons—Wire and Manila Rope
 Wood Shovel & Tool Co.—Mo-lyb-den-um Shovels.
 Keystone Driller Co.—Drills and Excavators
 Lidgerwood Mfg. Co.—Utility Gas Hoists

WETTLAUER BROS.

Glendale 5689 2026 Michigan Avenue.

DETROIT, MICH.

Michigan Distributors for

AMERICAN CEMENT MACHINE CO.,
 BOSS MIXER, any size
 CONSTRUCTION MACHINERY COMPANY
 WONDER MIXERS, HOISTS AND PUMPS
 ORR & SEMBOWER
 HOIST, GASOLINE, STEAM OR ELECTRIC
 EVINRUDE CENTRIFUGAL PUMPS
 BLOCK MACHINE EQUIPMENT

West Michigan Equipment Co.

Contractors' Tools and Machinery

69 Division Ave. S., Grand Rapids, Mich.

REPRESENTING

Remmel Mfg. Co., Direct Drive Mixers
 Bay City Dredge Works, Excavators
 Domestic Pump & Engine Co., Air Compressors,
 Pumps, Hoists
 Orton Crane & Shovel Co., Cranes, Drag Lines,
 Shovels
 Sidney Steel Scrapers and Wheelbarrows
 Nelson Loaders
 A. Leschen & Sons, Wire & Manila Rope, Blocks
 Wood Shovel & Tool Co., Mo-lyb-den-um Shovels
 Sasgen Derricks
 Rex-Watson Corp.

H. E. ERICKSON CO., Inc.

114 South Third St., Minneapolis, Minn.

CONTRACTORS' EQUIPMENT AND SUPPLIES

Boes Conc. Mixers & Hoists
Stewart Conc. & Plaster-
Mixers
Saskett Spouting
Sagom Derricks
Kardong Clamps
Elite Scaffold Brackets
Austin Backfillers
Austin Trench Machines
Samson Hoists
ash Drag Buckets

Puffer Hubbard Wheelbarrows
Duff Trench Braces
Cement Tools of all kinds
Cement Sack Balers
Cement Sack Cleaners
Mandit Steel Dump Bodies
Gravel Screens
Mortar Mixers
M. & M. Form Clamps
Pumps
Parks Saw Rigs

THORMAN W. RSHOLT COMPANY

300 Tenth Ave. South
Minneapolis, Minnesota

REPRESENTING

Koehring Co. —Pavers, Mixers, Cranes
C. H. & E. Mfg. Co. —Saw Rigs, Tractors,
Pumps
Metal Forms Corp. —Steel Forms
Blystone Mfg. Co. —Mortar Mixers
Emerson Mfg. Co. —Steam Pumps
C. S. Johnson —Demountable Bins
Hadfield-Penfield —One Man Graders
The Trailmobile Co. —Trailers Dump Bodies
Vulcan Iron Works —Steam & Gas Locomotives
Mead-Morrison —Contractors' Equipment
M & M Form Clamp Co. —Column Clamps

EVERYTHING FOR THE CONTRACTOR

WM. H. HALE & Co.

607 Fifth Avenue South Minneapolis, Minn.

REPRESENTING

"WONDER"—Mixers, Hoists, "PAGE"—Drag Buckets
"RANSOME"—Mixers, Pav- "DAVENPORT"—Locomotives
ers, Mast Plants "BEACH"—Saw Rigs
"CLYDE"—Steam Gasoline, "SKELTON"—Bantam Shovels
Electric Hoists and Derricks "PUFFER-HUBBARD"—
"P. & H."—Gasoline Shovels, Wheelbarrows
Cranes, Backfillers, etc. "HAUCK"—Concrete Heaters
"ERIE"—Clamshell Buckets, "HANDY"—Sack Cleaners,
Aggregater Bins Balers
"ALDRICH"—High Pressure "SASGEN"—Derricks, Winches
Road Pumps "PAPKE"—Block Machines
"HAWLEY"—Tie Bolts and Tampers

MEMBER: Associated Equipment Distributors

WM. H. ZIEGLER CO., Inc.

Contractors' Equipment

Minneapolis, Duluth, & St. Paul, Minn.

Ord Concrete Road Finishers

Bex Mixers and Pavers

Inslay Towers and Chuting

Barnes Pumps

Plymouth Gasoline Locomotives

Western Cars and Grading Equipment

Williams Clamshell Buckets

Sterling Wheelbarrows and Carts

Wyoming Red Edge Shovels

Caterpillar Tractors

Erie Steam and Gas Shovel & Cranes

Littleford Bros., Tar Heaters, Kettles, etc.

Butler Bin and Measuring Hoppers

Barber-Greene Co., Conveyors and Loaders

Climax Trustworthy Engines

LaPlant Choate, Tractor Trailers and Snow Plows

Member: Associated Equipment Distributors.

MINNEAPOLIS EQUIPMENT CO.

520 Second Street, S. E. Minneapolis, Minn.

NORTHWEST DISTRIBUTORS for

Archer Tower Outfits Kardong Column Clamp
and Chuting Leach Concrete Mixers
Atlas Conveyors and Saw Rigs
Baldwin Shovels and J. S. Mundy Steam,
Scoops Gas and Electric
Byers Bear Cat Cranes Hoists
and Truckcranes Multi-Foots Pavers
Humphreys High and Trailers
Capacity Pumping Nelson Form Tie and
Outfits Spacers
Hotchkiss Steel Forms Pioneer Buckets and
Ideal Concrete Prod. Cableway
Machinery Red Star Carts and
Jaeger Concrete Mix- Wheelbarrows
ers and Placing Williamsport Wire Rope
Plants

BORCHERT - INGERSOLL, Inc.

ST. PAUL, MINN.

DISTRIBUTORS

DULUTH, MINN.

"Van Dorn" El. drills, girders

"Smith" Mixers and Pavers.

"Blaw-Knox" Con. forms, clam-

shell buckets & "Batcher plants"

"Northwest" Shovels & Cranes

"Sanderson-Cyclone" Drills

"Sullivan" Compressors, drills

"Domestic" Pumps and hoists

"Telsmith" Crushers, screens

and conveying machinery

"Northern" Conveyors

"Sauerman" Cableway excavators

and power drag scrapers

"Monarch" Crawler Tractors

Member: Associated Equipment Distributors

"Snow King" Rotary plows

"Parsons" Excavators, back-

fillers

"Universal" Truck crane

"Stroud" Graders, dump wagons

"Whitcomb" Gasoline and elec-

tric locomotives

"BB" All steel hand hoists

"Koppel" Industrial cars, etc.

"Haise" Loaders, belt conveyors

"McKiernan-Terry" Pile ham-

mers and jacks

"National" Cement block ma-

chines

"Nye" Steam pumps

Minnesota Equipment Co.

419 South Sixth Street

Minneapolis, Minn.

Northwest Distributors for

LAKEWOOD Mixers, Spouting, Carts, Tampers,
Screens, Subgraders, Cars, Track
LIDGERWOOD Steam, Gasoline and Electric
Hoists
THEW Steam, Gasoline Shovels and Cranes
MILWAUKEE Gasoline Locomotives
BAKER-MANEY Four-Wheel Self-Loading
Scrapers
SCHRAMM Air Compressors
OLETRAC Crawler Tractors
KWIK-MIX Small Tilting Concrete Mixers

Clifford Waterhouse

Box 337

WEST JACKSON, MISS.

Distributor of

Stockland Quick Lift Graders

Kwik Mix Concrete Mixers

Calco Drainage Gates

Armco Iron Culverts

DuPont Explosives

Red Strand Wire Rope

Wyoming Red Edge Shovels

Diaphragm and Centrifugal Pumps

Dump Wagons

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

E. A. MARTIN MACHINERY CO.

501-521 School St. Joplin, Mo.

New and Rebuilt Rock Drills,
Jack Hammer Drills, and Mount-
ings, Jaw Crushers, Crushing
Rolls, Screens and Screening
Plants.

REPRESENTING:

Construction Mch. Co. Cleveland Wheelbarrow
Miles Mfg. Co. Buckeye Machine Co.

G. W. VAN KEPPEL**Equipment for Contractors**

2045 Main Street, Kansas City, Missouri

Representing

KOEHRING COMPANY
C. H. & E. MFG. COMPANY
BLAW-KNOX COMPANY

Bunting Hardware & Machinery Co.

810-814 Walnut Street Kansas City, Mo.

T. L. Smith Company, Mixers.
Smith Engineering Works, Crushers, Elevators
and Screens.
Novo Engine Co., Gas Engines, Saw Rigs and
Pumps.
Sullivan Compressors and Drills.
Sterling Wheelbarrows.
Barber-Greene Conveyors and Loaders.
Archer Iron Wks., Concrete Buckets, Hoppers
and Spouting.
American Wire Rope.
M & M Form Clamp Co.

Member Associated Equipment Distributors

O. B. AVERY CO.

1442 N. Broadway St. Louis, Mo.

Contractors' Equipment and Supplies**REPRESENTING:**

Butler Bin Company
Erie Steam Shovel Company
Russell Grader Manufacturing Company
Sullivan Machinery Company
Koppel Industrial Car & Equipment Company
T. L. Smith Company
Lendinghaus Wagon Co.
The American Cement Machine Co.
Cleveland Wheelbarrow Company
G. H. Williams Co.
S. Flory Mfg. Co.
B. F. Goodrich Rubber Co.
Jeffrey Mfg. Co.
Union Iron Works, Inc.
Member Associated Equipment Distributors

FUNKHOUSER EQUIPMENT CO.

2405 Jefferson Street

KANSAS CITY, MISSOURI

Representing:

Lakewood Engineering Co.
Northwest Engineering Co.
Domestic Engine & Pump Co.
Lidgerwood Mfg. Co.
Jaeger Machine Co.
Ideal Power Lawn Mower Co.
Climax Engineering Co.
McKiernan-Terry Drill Co.

LAWRENCE V. FRALEY

Buder Bldg., 707 Market St.,

St. Louis, Missouri

Barber-Greene Company
The Fate-Root-Heath Company

Standardized Material Handling and Road Building Machinery

Self-Feeding Bucket Loaders
Standardized Portable Conveyors
Standardized Permanent Conveyors
B-G Trenching Machines
PLYMOUTH Gasoline Locomotives
Highway Trailers

G. C. KENNEY**Road Building Equipment**

521-2-3 N. Y. Life Bldg., Kansas City, Mo.

Phone, Victoria 6331

REPRESENTING:

Ord Concrete Road Finisher
Smith Pavers
O. & S. Cranes and Shovels
Marsh-Capron Rail Track Mixers
Speeder Cranes and Shovels
Freeman Turntables
Erie Bins and Buckets
Barber Greene Loaders
Ideal Concrete Block Machines
Gallon Junior Rollers
O K Hoists and Compressors
Orton Cranes and Shovels

S. T. Hatcher & Company

3665-67 Market St., St. Louis, Mo.

REPRESENTING

KNICKERBOCKER—Concrete Mixers,
Mortar Mixers, Saw Rigs.
KIEL—Concrete Mixers, Diaphragm
Pumps.
ARCHER IRON WORKS—Steel Tower
Hoists, Concrete Chutes, Concrete
Buckets.
PARKS—Woodworking Machines.
LE ROI—Gasoline Engines.

C. F. RABBEITT

Railway Exchange Bldg:

ST. LOUIS REPRESENTING: MISSOURI

Aeroll Burner Co., Concrete Heaters, Thawing
Torches
Archer Iron Works, Spouting Equipment
Blaw-Knox Co., Bins, Batchers Plants, Road and
Sidewalk Forms, Buckets
Century Bag Cleaner Co., Cement Bag Cleaners
O. H. & E. Mfg. Co., Saw Rigs, Pumps, Hoists,
Mortar Mixers
Construction Machinery Co., Tilting Drum Mixers
Koehring Co., Pavers, Construction Mixers,
Cranes, Shovels and Draglines
Littleford Bros., Asphalt Heaters, Pouring Pots,
Paving Tools
Sterling Wheelbarrow Co., Barrows, Carts
A. W. French & Co., Ord Concrete Road Finishers
Western Wheeled Scraper Co., Cars, Trucks.

Northwest Equipment Co. Inc.

Butte, Great Falls, Billings, Montana

**Road Machinery and
Contractors' Equipment**

Representing

RUSSELL GRADER MFG. CO.

Byers Bear Cats	Koehring Mixers and
Bucyrus Shovels	Pavers
Cletrac Tractors	Rommel Mixers
A. W. Traffic Treads	Sterling Motor Trucks
Monarch Industrial	Smith Eng. Works
Tractors	

"Our Customer Must Be Satisfied"

THE GEO. F. SMITH COMPANY

REPRESENTING

T. L. Smith Co.	Wyoming Shovel Works
Smith Engineering Works	Nye Steam Pump & Moly. Co.
Sterling Wheelbarrow Co.	American Steel & Wire Co.
Insley Mfg. Co.	McKiernan Terry Drill Co.
Clyde Iron Works	Hauk Mfg. Co.
Domestic Engine & Pump Co.	Continental Motors Co.
Universal Crane Co.	Le Roi Company
Owen Bucket Co.	Carbie Mfg. Co.
Sauerman Bros.	Templeton Kelly & Co.
Saugen Derrick Co.	Hawley Tie Bolt Co.

Franklin and Channing Aves., ST. LOUIS

Member: Associated Equipment Distributors

WESTERN SUPPLY COMPANY

802-812 East Iron St. Butte, Montana

Broderick & Bascom Rope Co.
E. & J. Dick Co., Inc.
Erie Steam Shovel Co.
Gardner Governor Company
Goodyear Tire & Rubber Co.
George Hais Mfg. Co.
Hill Company
Little Red Wagon Mfg. Co.
Novo Engine Company
Ransome Concrete Machinery Co.
Templeton & Kenly Co., Ltd.
Universal Road Machinery Co.
Westinghouse Electric & Mfg. Co.
The Monarch Machine Tool Co.

TULLEY EQUIPMENT COMPANY

Contractors' and Industrial Equipment

2339 Pine St. -x- St. Louis, Mo.

REPRESENTING

Orton Crane & Shovel Co., Cranes, Drag Lines and Buckets
Chain Belt Company, Pavers and Building Mixers
Barnes Pump Company, Contractors' Pumps
Easton Car & Construction Company, Cars and Trucks
Pioneer Bucket Co., Cableway Excavators
Orr & Sombower, Gas Hoisting Engines, Boilers
George Hais Mfg. Company, Wagon Loaders and Conveyors
Hetzl Company, Sidewalk Construction Forms
Zin-Ho Portable Air Compressors
LeRoi Company, Gas Engines
C. S. Johnson Company, Portable Bins and Hoppers
Climax Engineering Company, Gas Engines
Milwaukee Locomotive Manufacturing Co., Gasoline Locomotives
Hug, Trucks, Sub-Graders

Ingeniero Joaquin M. de Uriarte

Avenida 5 de Mayo No. 1,

Mexico, D. F., Mexico

Representing

Austin Mfg. Company
Barber-Greene Company
Clyde Iron Works Sales Company
The Lakewood Engineering Co.
The Thew Shovel Company
The Universal Crane Co.

WEBER IMPLEMENT & AUTOMOBILE CO.

10th & LOCUST ST

23rd & GRAND AVE.



ST. LOUIS, MO.

KANSAS CITY, MO.

Representing:

CATERPILLAR TRACTOR COMPANY

Holt and Best Tractors.

LA PLANT-CHOATE MFG. COMPANY

Tractor Dump Wagons, Snow Plows, Bul-
ldozers, Self-Loading Scrapers, Tractor Trail-
ers, Etc.

BAKER MANUFACTURING COMPANY

Road Maintainers.

D-A LUBRICANT COMPANY

Transmission and Truck Wheel Lubricants.

FUCHS EQUIPMENT COMPANY

OMAHA, NEB.

REPRESENTING:

Smith Mixers and Pavers.	National Hoists.
Blaw Knox Form, Buckets, Bins	Akron Wheelbarrows.
Barber-Greene Loaders, Convey- ers.	Lochess Hercules Cable
M & M. Form Clamps.	Atlas Shovel.
P & H Cranes, Shovels, Drag- lines.	Le Roi Engines
Ingersoll-Rand Compressors	Erie Gravel Pumps.
Whitecomb Locomotives.	Twin City Engines.
Tel-Smith Crushers.	Wachusa Engines.
Domestic Pumps, Hoists.	Woods Molybdenum Shovels.
Barnes Pumps.	Ord Concrete Road Finishers.
	Du Pont Explosives

Member: Associated Equipment Distributors.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

INTERSTATE Machinery and Supply Company

OMAHA, NEB.

CLIMAX Trustworthy Engines
 REX Mixers and Pavers
 WONDER Mixers—Pumps—Hoists
 NOVO Hoists—Pumps—Saw Rigs
 HAISS Loaders
 NORTH WEST Cranes and Shovels
 RED-EDGE Shovels and Picks
 IDEAL Block Machines
 STERLING Wheelbarrows
 SAUERMAN Excavators and Scrapers
 WILLIAMS Buckets AMERICAN Wire Rope
 METAFORM Forms INDUSTRIAL Power Units
 LAKEWOOD Eng. Co. CHICAGO Aut. Conveyor
 SULLIVAN Mach. Co. Mining & Quarry Machinery
 Members: Associated Equipment Distributors.

THE WHEELER-MURRAY CO.

Construction and Industrial Equipment
 335-337 Ellicott St., Builders Exchange
 Buffalo, N. Y. Rochester, N. Y.

REPRESENTING:

Bansome Pavers, Mixers, Towers and Chutes.
 Novo Engines, Hoists and Pumps.
 O & S Locomotive Cranes and Shovels.
 Erie Aggregators and Clamshell Buckets.
 National Hoists, Derricks, Pile Hammers.
 Sidney Wheelbarrows, Scrapers and Plows.
 Hotchkiss Steel Road, Curb and Sidewalk Forms.
 Richmond Screw Anchor Concrete Specialties.
 Atlas Adjustable Shores.
 Mead-Morrison Crawler Tractors.
 Walsh Steel Snow Plows.

A. P. BECKER

ALBANY, N. Y.
 Construction & Sales Engineering
 EQUIPMENT & MACHINERY

Allen Air-Turbines	Power Shovels
Blowers	Paving Mixers
Boilers	Pumps
Conveyors	Rock Drills
Crushers	Screens
Compressors	Spouting Systems
Cranes	Storage Bins
Derricks	Steel Towers
Elevators	Trenching Machines
Loaders	F. W. D. Trucks
Mixers	Wood Workers
Dump Wagons	

J. I. BINGHAM

Contractors' Equipment
 451 West Gray St. Elmira, N. Y.

Kiel Machine Co.—Concrete Mixers.
 Archer Iron Works—Concrete Chutes and Buckets.
 C. H. & E. Mfg. Co.—Saw Rigs, Pumps.
 O. K. Clutch & Machinery Co.—Portable Air Compressors, Hoists.
 Hotchkiss Steel Products Co.—Road, Curb and Sidewalk Forms
 Chicago Automatic Conveyor Co.—Wagon Loaders and Conveyors.
 The Knickerbocker Company—Concrete and Plaster Mixers.
 Wickwire Spencer Steel Co.—Mesh Reinforcements.
 Aaroll Burner Co.—Concrete Heaters, Thawing Torches.

JAMES PHILLIPS, Inc.

1733 to 77-60th St. Brooklyn, N. Y.
 Tel. Beachview 9971

Orr & Sembower, Inc.—Concrete Mixers, Hoists and Boilers.
 T. & M. Pump Co.—Contr's. Pumping Outfits.
 Trowbridge Conveyor Co.—Portable Conveyors.
 20th Century Woodworkers—Variety Woodworking outfits—gas and electric.
 Highway Trailer Co.—Trailers.
 J. W. Buckley Rubber Co.—Rubber Hoses.
 Lansing Co.—Wheelbarrows & Concrete Carts.
 Decora Paint Spray Co.—Paint Spraying Equipment.

GEORGE MALVESE & CO.

Jericho Turnpike, Near Nassau Blvd.
 GARDEN CITY, NEW YORK

Representing:

Cietrac Crawler Tractors	Wiard Plows
Schaefer Automatic Scrapers	Domestic Pumps
Killefer Rotary Scrapers	Western Block Co.
Euclid Scrapers	Blocks
Acme Road Machines	Broderick & Bascom
Oliver Plows	Wire Rope
	Ever-Ready Hydraulic
	Jacks
	Woodhouse Chain

H. B. TREVOR COMPANY

Larkin Terminal Warehouse Bldg.
 197 Van Rensselaer Street
 Buffalo, N. Y.

REPRESENTING:

Kochring Company
 Insley Manufacturing Company
 Blaw-Knox
 Clyde Iron Works
 Barnes Manufacturing Company
 Beach Manufacturing Company
 McKiernan-Terry Drill Co.

GEORGE D. CASE

Engineer and Contractor
 ROAD BUILDING EQUIPMENT
 Horseheads, New York
 Bell Phone 161

Representing

RUSSELL Road Machinery
 REX-WATSON Wagons
 SCHRAMM Air Compressors
 WEARPROOF Signs
 GELSER Concrete Pipe
 MONARCH Tractors
 —"Steel Bridges"—WAUSAU Snow Plows—

DRAVO EQUIPMENT CO.

21-57 Borden Ave., Long Island City, N. Y.

REPRESENTING:

Marsh Capron Concrete Mixers
 Kwik-Mix Tilting Mixers
 Johnson Bins and Hoppers
 Superior Saw Rigs
 Cleveland Red Star Wheelbarrows, Carts,
 Chutes and Batch Boxes.
 Nove Engines, Hoists, Pumps and Air
 Compressors
 Asroll Concrete Heaters

GINSBERG-PENN CO.

Incorporated

18 East 41st Street, New York City

Construction Equipment

Chain Belt Co.,	Archer Ir. Wks., Conc.
Rex Mixers, Pavers	Chuting Equipment.
O. K. Clutch & Mch.	Acme Rollers
Co., Gas and Electric	Ideal Cement Grader
Hoists	Blocks
Byers Machine Com-	Domestic High Press-
pany, Cranes	ure Pumps
Beach Mfg. Co., Saw	Link Belt Cranes and
Rigs	Shovels
Butler Equip. Co., Steel	Hotchkiss Steel Road
Bins and Batchers.	and Curb Forms
Warehouse Stock	Service Station

Telephone, Vanderbilt 2738-2739

"Brooks for Concrete Equipment"**R. E. BROOKS CO.***Equipment for Contractors*

50 Church St. New York City

Representing

KOEHRING COMPANY
 INSLEY MFG. CO.
 C. H. & E. MFG. CO.
 BLAW-KNOX CO.
 CLYDE IRON WORKS
 BAY CITY FOUNDRY & MACHINE CO.
 HANDY SACK BALER CO.
 ORD CONCRETE ROAD FINISHERS

G. S. GREEN CO., INC*Contractors' Equipment & Supplies**New York Office and Warehouse*

72-74 Warren St.

AGENTS AND DISTRIBUTORS FOR

DOBBIE Derricks and Fittings, Lumber Trucks,
 Sully Derricks, Winches, Sheaves, Gasoline
 Hoists.
 SMITH Concrete Mixers
 CARTER "Humdinger" Pumps
 (Force and Diaphragm)
 WRIGHT Chain Hoists and Trolleys
 KEYSTONE Conc. Carts and Bar Benders
 M. H. E. CO. Weldless Turnbuckles

BROWN & SITES COMPANY*Specialists in Contractors' Equipment**Main Office: 30 Church Street***NEW YORK CITY***Exclusive Representative*

Lakewood Engineering Co.
 Mundy Hoisting Engine Co.
 Davenport Locomotive Company
 Lawrence Machine Company

FRANK E. HALL

152 W. 42nd St. New York City

Construction Equipment*Representing:*

FOOTE Paving Mixers
 FOOTE Heavy Duty Trailers
 HELTZEL Steel Road Forms
 ERIE Aggregometers and Clam Shell
 Buckets.

Telephone, Wisconsin 7364

**COMPLETE MACHINERY
& EQUIPMENT CO., Inc.***"Specialists in Pumps"*

233 West 42nd St. New York, N. Y.

REPRESENTING:

Humphries Mfg. Co., Pumps, Diaphragm, Lift
 and Force Plunger, and Centrifugal.
 Leach Company, Oshkosh, Concrete Mixers, Pav-
 ers, Saw Rigs.
 Economy Scaffold Co., Steel Horses, Standard and
 Adjustable.
 Compressors, Steel and Rope Blasting Mats.
RENTAL SERVICE

THE HUBBARD-FLOYD CO.

452 Lexington Ave. New York, N. Y.

REPRESENTING

NORTHWEST ENGINEERING CO.	Cranes and Shovels
KNICKERBOCKER COMPANY	Mixers and Saw Rigs.
T. L. SMITH COMPANY	Paving Mixers.
LAKEWOOD ENGINEERING CO.	Road Bldg. Mch.
J.-T. TRACTOR COMPANY	Five-Ton Tractors.
ROGERS BROTHERS CORP.	Heavy Duty Trailers.
LIDGERWOOD MFG. COMPANY	Gasoline Hoists.
BARNES MANUFACTURING CO.	Portable Pumps.
THE BUHL COMPANY	Air Compressors.
GILMAN MFG. COMPANY	Rock Drills.

MEMBER: Associated Equipment Distributors

E. B. KELLEY CO. Inc.**Concrete Machinery**

New York Office
130 W. 42nd St.

Newark Office
235 Halsey St.

Buffalo Office
1125 Niagara St.

Phila. Office
520 Arch St.

Representing:

Jaeger Concrete Mixers.
Sasgen Derricks and Winches.
Heltzel Steel Sidewalk and Curb Forms.
Cement Block and Brick Machinery.

J. SHUMAN HOWER**MATERIAL HANDLING EQUIPMENT**

106 Foster Bldg.

Utica, N. Y.

Representing

UNIVERSAL CRANE CO.—Cranes
LINK-BELT CO.—Shovels and Conveyors
G. H. WILLIAMS CO.—Buckets
C. S. JOHNSON CO.—Bins and Hoppers
RALPH B. CARTER CO.—Pumps
LAKEWOOD ENGINEERING CO.
GOULD PUMP CO.
HILL DEISEL ENGINE CO.

Haverstick & Company, Inc.

Ford and Spring Sts., Rochester, N. Y.

REPUBLIC IRON WORKS. Concrete Mixers
LANSING COMPANY. Barrows, Scrapers, etc.
INGERSOLL-RAND COMPANY Air Compressors
GARDNER GOVERNOR CO. Steam Pumps, Air
Compressors
AMERICAN STEEL & WIRE CO. Wire Rope
DOMESTIC ENGINE & PUMP CO. Pumping
Units, Hoists, etc.
D. ROUND & SONS CO. Chain Hoists, Winches,
etc.
GOODYEAR TIRE & RUBBER CO. Hose, Belt-
ing, etc.
GOULDS PUMPS, INC.
CONNEAUT SHOVEL CO.
BAKER MFG. CO. Baker Maney Scrapers, Bul-
ldozers, Snow Plows

J. B. NORTON COMPANY

INCORPORATED

UTICA

NEW YORK

REPRESENTING

Advance-Rumely Thresher Co., Inc.
Avery Power Machy. Co.
Chicago Automatic Conveyor Co.
Gallon Iron Works & Mfg. Co.
Kramer Automatic Tamper Co.
Lyle Culvert & Road Equip. Co.
Rotary Snow Plow Co.
Schramm, Inc.
Universal Road Machinery Co.

BREWSTER & WILLIAMS, Inc.

613 DILLAYE BLDG.,

SYRACUSE, N. Y.

Contractors' Supplies and Equipment

"REX" Mixers and Pavers
Blaw-Knox Road Equipment
Carey ELASTITE Expansion Joint
American Steel & Wire Co.'s Mesh Reinforcement
Littleford Asphalt Heaters and Tools
Saw Rigs, Pumps and Hoists
Haisa Loaders and Conveyors
"Easton" Rollover Bodies and Batch Boxes
Byers Machine Co., Skimmers and Cranes
M. & M. Form Clamps and Column Clamps

Member: Associated Equipment Distributors

LOU B. CLEVELAND

WATERTOWN

NEW YORK

Representing:

ALLIS-CHALMERS MFG. CO.
AMERICAN TERRY DERRICK CO.
BROWN HOISTING MACHY. CO.
CLEVELAND TRACTOR CO.
THE HAYWARD CO.
NOVO ENGINE CO.
RANSOME CONC. MCHY. CO.
UNION IRON WORKS
THE ATIA CORPORATION
W. H. ANDERSON CO.

Miller Equipment Co., Inc.

Syracuse - New York

Representing:

Domestic Engine & Pump Co.
Mead-Morrison Mfg. Co.
Bay City Dredge Wks.
Burch Plow Wks.
Lee Trailer & Body Co.
J. T. Tractors
Archer Iron Works
Northern Conveyor Co.
Leach Co.

AMERICAN HARDWARE & EQUIPMENT CO.

CHARLOTTE

NO. CAROLINA

Representing:

T. L. Smith Company
Bucyrus Company
Hotchkiss Steel Products Co.
The Lidgerwood Company
The Novo Engine Company
Vulcan Locomotive Company
American Saw Mill Mach. Co.
Acme Road Machinery Co.
Ingersoll-Rand Co.

E. F. CRAVEN*"The Road Machinery Man"***GREENSBORO NORTH CAROLINA****REPRESENTING**

Caterpillar Tractor Co.	Littleford Brothers
Russell Grader Mfg. Co.	Wiard Plow Co.
Erie Steam Shovel Co.	Universal Crane Co.
Buffalo Springfield	Carbic Mfg. Co.
Roller Co.	D-A Lubricant Co.
Ingersoll-Rand Co.	Baker Mfg. Co.
Western Wheeled	Erie Steel Constr. Co.
Scraper Co.	Wyoming Shovel Wks.
Domestic Engine and	Chain Belt Co.
Pump Co.	The Parsons Co.
Rex-Watson Corp.	G. H. Williams Co.
Geo. Hains Mfg. Co.	

The Queen City Supply Co.

Pearl and Elm Sts.

Cincinnati, Ohio

REPRESENTING:

T. L. Smith Co.—Building and Paving Mixers
 Clyde Iron Works Co.—Hoisting Engines.
 Sagen Derrick Co.—Derricks, etc.
 Ingersoll-Rand Co.—Compressors, Drills, etc.
 Heltzel Steel Form & Iron Co.—Road Forms.
 Hercules Motors Corp.—Gas and Gasoline Engines
 Wyoming Shovel Co.—Red Edge Picks and
 Shovels.
 Rex-Watson Corp.—Dump Wagons, Tractors
 and Trailers.
 Domestic Engine & Pump Co.
 Cincinnati's Largest Equipment House.

MEMBER**ASSOCIATED EQUIPMENT DISTRIBUTORS****J. D. WILKINS**Office and Warehouse—West Lee Street
Greensboro, N. C.**REPRESENTING**

Clyde Iron Works—Steam, Gas, Electric Hoists;
 Steel Derricks, Derrick Irons.
 Leach Co.—Celebrated Leach-Oshkosh Building
 Mixers, Material Elevators, Saw Rigs.
 Ralph B. Carter Co.—Hundinger Pump and Sup-
 plies.
 Williamsport Wire Rope Company—Williamsport
 "Telfax Tape Marker."
 Sagen Derricks.
 Archer Iron Works—Steel Tower Units, Concrete
 Towers and Equipment.

Bacon Engineering Sales Co.,MARVIN J. BACON, *Manager*

251 Erie Bldg.

Cleveland, Ohio

HUG DUMP TRUCKS
REX PAVING MIXERS
REX BUILDING MIXERS
McMYLER CRANES
ERIE AGGREGATE PLANTS
MIDWEST LOCOMOTIVES
BARNES PUMPS
HOTCHKISS STEEL FORMS
ARCHER STEEL MAST HOISTS
 Cleveland Warehouse Rental Service
 Phone—Superior 939.

J. C. NEELY & CO.

201 Goldberg Building

CANTON, OHIO**Representing**

ATLAS Portable Conveyors
 REPUBLIC Concrete Mixers
GOOD ROADS MACHY. CO. Road Building
 Equipment
 CONNERY Tar and Asphalt Kettles
 DOMESTIC Pumps and Air Compressors
 Railway Equipment — Tar and Asphalt Products
 Reinforcing Steel — Railway Culvert Pipe

The Day & Maddock Company*Contractors' New and Rebuilt Equipment*
West 82nd St., So. of Denison Ave., Cleveland, O.**Representing**

Broderick & Bascom Rope Co.	Wire Rope
Heltzel Steel Form & Iron Co.	Sidewalk Forms
Huber Manufacturing Co.	Rollers
Humphries Mfg. Co.	Diaphragm Pumps
Knickerbocker Company	Mixers
Marion Steam Shovel Co.	Shovels & Cranes
E. J. McHarg & Co.	Multi-Foots Pavers
Orton Crane & Shovel Co.	Cranes
Owen Bucket Co.	Clamshell Buckets
Rommel Manufacturing Co.	Tilting Mixers
Sterling Wheelbarrow Co.	Wheelbarrows
Sullivan Machinery Co.	Air Compressors
Thomas Elevator Co.	Hoists
Geo. Hains Mfg. Co.	Loaders and Conveyors
McKiernan-Terry Drill Co.	Pile Hammers

Member: Associated Equipment Distributors

The Geo. B. Curd Equipment Co.609-811 Reading Road
CINCINNATI, OHIO**Distributors:**

Caterpillar Tractor Co.	Best & Holt Tractors
Climax Engineering Co.	Contractors & Industrial
Lakewood Engineering Co.	Equip.
Smith & Sons Mfg. Co.	Baker Manly Wheel Scrapers
Baker Mfg. Co.	Pumping Machinery
Barnes Mfg. Co.	Crawler, Cranes & Shovels
Northwest Engineering Co.	Conveyors
Atlas Engineering Co.	Road Rollers, Crushers, etc.
Anne Road Mach'y Co.	Wagon Loaders
Geo. Hains Mfg. Co.	Tractor Dump Trailers
LaPlant-Chouteau Mfg. Co.	Gasoline Hoists
O. K. Clutch & Mach'y Co.	Steel Sins and Measuring
Butler Sin Co.	Hoppers

Member: Associated Equipment Distributors

DRAVO EQUIPMENT COMPANY

4800 Prospect Avenue, Cleveland, Ohio

REPRESENTING

MARSH-CAPRON—Rail Track Concrete Mixers.
 KWIK-MIX—Tilting Concrete Mixers and
 Plaster Mixers.
 MEAD-MORRISON—Crawler Tractors, Car Pull-
 ers, Hoists, etc.
 NOVO—Pumps, Hoists, Compressors, Engines.
 JOHNSON—Demountable Bins and Hoppers.
 P & H—Corduroy Cranes and Shovels.
 BARNES—Portable Air Compressors.
 CLEVELAND RED STAR—Wheelbarrows, Con-
 crete, Buggies, etc.
 ATLAS—Portable Conveyors.
 JONES SUPERIOR—Saw Rigs.
 AEROLL—Oil Burners, Torches, Kettles, etc.
 Member: Associated Equipment Distributors

THE W. M. PATTISON SUPPLY CO.

777 Rockwell Ave., Cleveland, Ohio

REPRESENTING:

American Saw Mill Mach. Co.—Wood Working Machinery.
Domestic Pump & Eng. Co.—Contractors' Pumps.
Emerson Pump Co.—Emerson Steam Pumps.
Ingersoll-Rand Company—Air Compressors and Tools.
Jaeger Machine Co.—Concrete Mixers.
Orr & Sembower, Inc.—Hoisting Engines, Boilers.
Saugen Derrick Co.—Derricks, Winches.
Wall Rope Company—Manila Rope.
Bex-Watson Corp.—Contractors' Dump Wagons.
Western Wheeled Scraper Co.—Scrapers.
Member Associated Equipment Distributors.

JOHN McNEILLY

335 South High St. Columbus, Ohio.

REPRESENTING

The Parsons Co. Trenching Machines, etc.	Erie Steel Constr. Co. Aggregators, Steel Bins
Northwest Engr. Co. Electric & Gasoline Cranes, Shovels and Draglines	McKiernan-Terry Drill Co. File Hammers, Jacks
Mead-Morrison Co. Hoisting Mach., Tractors, Buckets, Gasoline Cranes	Saugen Derrick Co. Derricks, Winches, etc.
Ransome Const. Mach. Co. Concrete Mixers, Steel Towers and Chutes	Hercules Motors Corp. Gasoline Engines
Blystone Mfg. Co. Concrete, Mortar and Plaster Mixers	Le Roi Co. Gasoline Engines
American Gasoline Saws	Pulsometer Steam Pump Co., Pumps
	De Walt Electric Saws

Peden Equipment Co.

10230 Berea Rd.
Cleveland, Ohio

The Lakewood Engineering Company, Concrete Mixers, Chuting Plants, etc.
Northwest Engineering Company, Gas Shovels, Cranes and Draglines
Butler Bin Company, Steel Bins and Measuring Hoppers
Leach Company, Tilting Drum Mixers
Topping Machinery Company, "Pony Ditchers"
Heltzel Steel & Iron Company, Road and Side-walk Forms
Sterling Wheelbarrow Company
Gas Electric Hoist, Conveyors, Dump Wagons, etc.

SEIBERT-MILBURN CO.

141 N. FRONT ST COLUMBUS, OHIO.

Smith Paver and Building Mixers
Telamith Crushers and Washing Plants
Insley Concrete Handling Machinery, Excavators,
Guy and Stiffing Derricks
Pioneer Slackline Cableway Buckets
Thomas Electric Hoists
Owen Clamshell Buckets
Ingersoll Rand Compressors and Tools
Halse Loaders and Conveyors
Sunbury Car Unloaders
Orr and Sembower Hoists and Boilers
Erie Gasoline and Steam Shovels
Domestic Pumping Outfits
Saugen Derricks
Little Wonder Scaffolding Hangers
Atlas Shores
Joyce Jacks
MEMBERS: Associated Equipment Distributors

E. F. PEGG EQUIPMENT CO.

130 Engineers Bldg. Cleveland, O.
Main 2138

Representing:

Ransome Concrete Mixers & Chuting Plants.
National Hoists—Electric, Steam & Gasoline
National Pile Hammers.
Universal Screening Plants and Unloaders
Berg Concrete Surfacers, Finishers and
Electric Air Cushioned Hammer

STITH & ELLIOTT

303 Franklin Bldg., High and Main Sts.
COLUMBUS, OHIO

REPRESENTING

Foots Co. Paving Mixers	American Cement Machinery Co. Non-Tilting Mixers and Hoists
Link-Belt Co. Cranes and Shovels	Curtis Pneumatic Machinery Co. Fordson Air Compressors
Barnes Mfg. Co. Pumps and Air Compressors	Cleveland Rock Drill Co. Rock Drills and Paving Breakers
Littleford Bros. Tar and Asphalt Kettles	Eagle Wagon Works Dump Wagons
Jaeger Machine Co. Concrete Mixers	Toledo Dump Gate Spreader & Supply Co. Dump Gate Spreaders
Cleveland Tractor Co. Caterpillar Tractors	Automatic Signal & Sign Co. of Chicago Reflecting Signals and Street Signs

POPE EQUIPMENT CO.

Kent Pope, Mgr.

4111 Euclid Ave., Cleveland, Ohio

Transportation Engineers

Highway Trailers—All Sizes and Kinds
Lenschmann Loaders
Municipal Equipment
Traffic Signals
Solar Sturges City Street Waste Boxes
Andresson Road Repair Outfits
Littleford Bros. Tar Kettles

Everything for the Contractor
The best of its kind

The W. W. Williams Co.

COLUMBUS, CLEVELAND, TOLEDO, CINCINNATI

REPRESENTING

The Koehring Company
The Sterling Motor Truck Co.
The C. H. & E. Mfg. Co.
Hug Company
The Monarch Tractor Corp.
The Sterling Wheelbarrow Company
A. W. French & Co.
Blaw-Knox Co.
Construction Machinery Co.
and other well-known manufacturers of
contractors' equipment.

T. J. LANE EQUIPMENT COMPANY

Everything for the Contractor
SPRINGFIELD, OHIO

Representing

The Chain Belt Company. Hot Pavers, Building Mixers
Hetzl Steel Form Company. Steel Road Forms
Barnes Manufacturing Company. Road and Diaphragm Pumps
Freeman Manufacturing Co. Turntables for Road Builders
A. W. French & Co. Ord Road Surfactors
C. S. Johnson Company. Steel Bins
Bay City Dredge Co. Cranes, Grading and Sewer Excavators
Street Brothers. Steam, Electric and Gasoline Hoists
Saugen Derrick Company. All Kinds of Derricks
Jes. Hoberst Company. Tar Heaters and Sand Dryers

J. WALKER WILSON**CONTRACTORS' MACHINERY**

1009 Mahoning Bank Bldg.

YOUNGSTOWN

OHIO

EXCLUSIVE SALES AGENT

For Keystone Driller Company in Northern Ohio
and Northwestern Pennsylvania.

Keystone Traction Excavator for Road
Grading, Trenching, Back-Filling, and Cellar
Digging

The Locomotive Crane Co.

Acme Road Machinery Co.

Blaw-Knox Co.

The Foote Co., Inc.

Telephone 3-5766

W. A. KUHLMAN & CO.**CONTRACTORS' EQUIPMENT**

840-342-344 Water Street, TOLEDO, OHIO

Smith Pavers and Building Mixers
Smith Crushers and Quarry Equipment
Northern Conveyors and Steel Storage Bins
Sauerman Drag Line Outfits
Barnes Pumping Outfits
Clyde Hoists and Derricks
Metaform Steel Road and Sidewalk Forms
Saugen Wooden Derricks and Winches
Ord Finishing Machines
Insley Excavators. Steel Towers and Mast Hoist
Outfits, Air Compressors, Saw Tables, Wire
Rope, Etc.

Union Iron Works, Steam Hammers, Etc.

Member: Associated Equipment Distributors

The Boardman Company*Contractors' Equipment*

Oklahoma City

Oklahoma

REPRESENTING

Stockland Road Machinery Co.

Duplex Manufacturing Company

Western Wheeled Scraper Company

Sterling Wheelbarrow Company

Wyoming Shovel Works

Page Fence & Wire Products Assn.

The National Supply Company

TOLEDO, OHIO

*Contractors' Equipment and Supplies***DISTRIBUTORS FOR**

Ingersoll-Rand Company
Essick Plaster Mixer Company
Ransome Concrete Machine Company
Novo Engine Company
Hotchkiss Steel Forms
Roebbling's Wire Rope
Red Edge Shovels
Bego Welding and Cutting Equipment
and other high class goods.

CLYDE EQUIPMENT CO.*Contractors' Equipment and Supplies*

Portland, Oregon

Seattle, Wash.

Acme Road Machinery Co.

Barber Asphalt Paving Co.

Barnes Mfg. Co.

Barber-Greene Co.

The Boda Co.

Byers Machine Co.

Champion Blower & Forge Co.

Clyde Iron Works

Gardner Governor Co.

Handy Sack Baker Co.

Lakewood Engineering Co.

LeRoi Engine Co.

Lee Trailer & Body Co.

Lincoln Electric Company

Boeyrus Co.

Alexander Millburn Co.

Ohio Locomotive Crane Co.

Rumsey Pump Co.

Saugen Hoist & Derrick Co.

Sauerman Brothers

Shaw Enock Tractor Co.

Sidney Steel Scraper Co.

Sterling Wheelbarrow Co.

Vulcan Iron Works

Sullivan Machinery Co.

Traylor Eng. & Mfg. Co.

McKiernan-Terry Drill Co.

Western Wheeled Scraper Co.

Member: Associated Equipment Distributors

J. R. VANKEPPEL

211 William St.

Toledo, Ohio

Representing:

NORTHWEST ENGINEERING COMPANY
LAKEWOOD ENGINEERING COMPANY
FAIRFIELD ENGINEERING COMPANY
THE PARSONS COMPANY
NELSON IRON WORKS
MULTI FOOTE PAVERS
ACME ROAD GRINDERS

FEENAUGHTY MACHINERY CO.*Road & Contractors' Equipment*

309-315 E. Yamhill St., Portland, Ore.

Representing

Austin Manufacturing Co.

Austin Western Road Ma-

chinery Co.

Baker Manufacturing Co.

Caterpillar Tractor Co.

F. D. Cummer & Son Co.

The Foote Company, Inc.

Penna. Boiler Wks.

Four Wheel Drive Auto Co.

Ingersoll-Rand Co.

Jaeger Machine Co.

Jeffrey Manufacturing Co.

Birdsell Mfg. Co.

Hart Grain Weigher Co.

La Plant-Cheate Mfg. Co.

Hill Diesel Eng. Co.

Newport Rolling Mill Co.

The Russell Company.

Sterling Wheelbarrow Co.

St. Marys Oil Engine Co.

Thew Shovel Co.

Troy Wagon Works Co.

Universal Crane Co.

Western Wheeled Scraper Co.

Webb City & Cartville

Foundry & Machine Works

Amer. Saw Mill Masty. Co.

The Owen Bucket Co.

Littleford Bros.

HOWARD-COOPER CORPORATION

Portland Seattle Spokane Boise

REPRESENTING:

Monarch Tractors Corp.	Mixers and Pavers
T. L. Smith Co.	
Amer. La France Fire	Fire Dept. Supplies
App. Co.	Crawler-Type Tractors
Austin Machy. Corp.	Sewer Trenches
Good Roads Machy. Co.	Road Machinery
Schramm, Inc.	Air Compressors
Symons Brothers Co.	Disc Rock Crushers
Orton Crane & Shovel	
Co.	Gas Shovels, Cranes
Eagle Wagon Works	Dump Wagons
Gramm-Kincaid Motor	
Truck Co.	Motor Trucks
Gilbert	Power Graders
Stockland Machy. Co.	Road Graders

HERR "THE PUMP MAN"

Lancaster

Penna.

REPRESENTING:

Gould Pumps, Inc., Pumps
 Construction Machinery Co., Mixers and Hoists
 Century Electric Co., Motors
 Buch Mig. Co., Barrows
 Loudon Machinery Co., Barn Equipment
 Domestic Engine & Pump Co., Hoists and Compressors & Pumps
 Fuller & Johnson Co., Gas Engines
 Wood Working Machinery

J. L. LATTURE EQUIPMENT CO.

354 Belmont St., Portland, Oregon

Representing

Keystone Driller Co., Excavators
 Smith Eng. Wks., Rock Crushers, Gravel Plants
 Knickerbocker Concrete Mixers
 Gallon Ir. Wks. & Mfg. Co., Road Rollers, Graders
 Atlas Imperial Engine Co., Diesel Engines
 Columbia Concrete Carts
 Ideal Concrete Machy. Co., Conc. Block Machines
 American Steel Scraper Co., Scrapers and Plows
 Wood Shovel & Tool Co., Molybdenum Shovels
 Blaw-Knox Co., Road Forms, Clam Shell Buckets
 Rex-Watson Dump Wagons
 Union Iron Wks., Steam Pile Hammers

**CONTRACTORS' EQUIPMENT
CONBOY CO.
CONSTRUCTION MACHINERY**

Perry Bldg.

Philadelphia

REPRESENTING

Baker-Maney Scrapers
 Charter Fuel Oil & Kerosene Engines
 Minster Gasoline Engines
 Orr & Sembower—Concrete Mixers, Hoists, Boilers
 Clamshell Buckets
 Burch Stone Spreaders, Unloaders and Conveyors

**Loggers and Contractors
Machinery Company**

Portland, Ore.

Office, 70 4th St. Shop, 17th & Sherlock

Representing

Erie Steam Shovel Co.
 Chain Belt Co.
 Inaley Manufacturing Co.
 G. H. Williams Co.
 Pioneer Bucket Co.
 H. K. Porter Co.
 Geo. D. Whitcomb Co.
 C. D. Edwards Mfg. Inc.
 Sidney Steel Scraper Co.
 Wyoming Shovel Works
 LeEol Co.
 Mundy Hoisting Engine Co.

DE HUFF AND HOPKINS

Engineering Equipment

Morris Bldg. Philadelphia, Pa.

REPRESENTING:

Bay City Dredge Works
 Power Operated Shovels
 Brookville Truck & Tractor Company
 Ford & Fordson Locomotives
 Coffin Valve Company
 Sluice Gates and Shear Gates
 Easton Car and Construction Company
 Car and track equipment for contractors,
 Dump Bodies, Measuring Hoppers, Etc.
 Milwaukee Locomotive Mfg. Co.
 4-Speed Geared Type Gasoline Locomotives
 Fordson Type Bucket Loaders

McCracken-Ripley Co.

61-67 Albina Ave.

Portland, Ore.

REPRESENTING

Atlas Lumnite Cement Co.—Lumnite Cement
 Atlas Portland Cement Co.—White Cement
 Union Metal Mfg. Co.—Union Metal Columns
 M. & M. Form Clamp Co.—Form Clamps
 Blystone Mfg. Co.—Plaster Mixers
 Cleveland Wheelbarrow & Mfg. Co.—Red Star
 Wheelbarrows, Concrete Carts
 Construction Machinery Co.—Wonder Mixers and
 Hoists
 Pacific Coast Steel Co.—Reinforcing Steel
 H. W. Roos Co.—Rooshers

Full Supply of Building Specialties

Dravo Equipment Company

1505 Race St.

Philadelphia, Pa.

MARSH-CAPRON Concrete Mixers.

KWIK-MIX Tilting Mixers.

Sidewalk, Curb and Gutter Forms.

HAISS Loaders and Conveyors.

SUNBURY Car Unloaders.

BARNES Pumps.

PIONEER Slackline Excavators

MILBURN Lights, etc.

Air Compressors.

MEAD-MORRISON Hoists, Tractors and Cranes.

CLEVELAND Wheelbarrows and Carts.

JONES Superior Saw Tables.

JOHNSON Demountable Bins and Hoppers.

Member: Associated Equipment Distributors

EDELEN & BOYER CO.

Construction and Industrial Equipment

Office & Warehouse 236 No. 23rd St., Philadelphia, Pa.
Representing

Foot Paving Mixtures
Freeman Turntables
Freese Drags and Scrapers
Helfel Steel Road, Sidewalk,
Curb and Gutter Forms
Sagen Derricks and Elevators
Union Steam Pile Hammers
Welder Mixers and Pumps
Wiles Block Machines
Pulometer Steam Pumps
Graders and Scarifiers
Nelson Loaders

Heavy Platform Trailers
Material Bins and Batches
Hayward Clam Shell Buckets
Building Mixers, Concrete Tow-
ers and Chuting Plants
Hoisting Engines, Boilers
Stiff Log and Guy Derricks
Saw Rigs, Road Builders Equip.
Canvas and Burlap Covers
Jackson Wheelbarrows, Picks
Shovels, Cement Tools, etc.

Member: Associated Equipment Distributors

J. Jacob Shannon & Co.

1744 Market Street 1744
PHILADELPHIA

REPRESENTING:

"Mundy" Steam, Elec-
tric & Gasoline Hsts.
"Novo" Gasoline Eng.
and Outfits
"Lakewood" Con-
crete Mixers, Chuting Equip-
ment, Road Equip.
"Williams" Clam Shell
Buckets
"Terry" Steel Erec-
tors' Derricks
"Sterling" Wheelbar-
rows and Carts

"Tale" Hardware &
Chain Hoists
"Roebbling" Wire Rope
"Wyoming" Red Edge
Shovels
"Sagen" Derricks &
Winches
"Berg" Conc. Sur-
facers & Finishers
"Bates" Wire Ties &
Tying Tools
"Emerson" Pumps
"Shannon" Derricks &
Derrick Fittings

GILES & RANSOME

231-33 No. 12th St., Philadelphia, Pa.
202 Long Bldg., Baltimore, Md.

Ransome Concrete Machinery Co.—
Concrete Mixers and Appliances.
Blaw-Knox Company—Clam-shell Buck-
ets, Steel Forms, Steel Buildings, Steel Bins.
Richmond Screw Anchor Company—
Concrete Specialties.
The Barnes Mfg. Company—Centrifugal
Diaphragm and Force Pumps.
Northwest Engineering Co. — Gasoline
Cranes and shovels.
Ord—Road Finishing Machine

STALEY & MORRIS, Inc.

214-220 N. 22nd St. Philadelphia, Pa.

DISTRIBUTORS

REX Concrete Mixers, Pavers ARCHER Concrete Chuting
BUTLER Bins, Batch Hoppers M & M Form Clamps
LITTLEFORD Kettles, Asphalt LeROI Engines
Tools TOLEDO Wheelbarrows
DOMESTIC Pumps, Hoists, UNIVERSAL Block Makers
Compensators MULTIPLEX Block Machines
CUMMER Asphalt Plants. PEELESS Brick Machines
Dryers BARRETT Lift Trucks
J. T. Tractors SPEEDER Cranes, Shovels
BEACH Saw Rigs AMERICAN Dragline Buckets

Everything For the Contractor and Cement Products Mfr.

MEMBERS: Associated Equipment Distributors

SERVICE EQUIPMENT COMPANY

Sales Engineers

211 North Third Street, Philadelphia, Pa.

REPRESENTING:

Knickerbocker Mixers, Skelton Shovels
Saw Rigs, Hawk Heaters
O. K. Hoists, Air Archer Tower Equip-
Compressors, ment
LeROI Engines Sagen Derricks
Toledo Wheelbarrows Milburn Lights
U. S. Standard Block Hawley Tie Bolt Co.
Machine Economy Scaffold Co.
L. A. S. Pumps and Ind. Fdry., Builders'
Tilting Mixers Heavy Hardware

Member: Associated Equipment Distributors

LEE T. WARD CO.

617 Filbert St. Philadelphia

REPRESENTING

Akron-Barrow Co.
Byers Machine Co.
O. H. & E. Mfg. Co.
Erie Steel Construction Co.
Hotchkiss Steel Form Co.
Ideal Concrete Machinery Co.
Jaeger Machine Co.
Koehring Co.
National Hoisting Engine Co.
Universal Form Clamp Co.



SERVICE SUPPLY CORPORATION

20th and Venango Sts.
Philadelphia, Pa.

REPRESENTING:

American Cement Machine Co.—Bore Concrete Mixers
Owen Bucket Co.—Clam Shell Buckets
S. Flory Mfg. Co.—Gasoline, Steam & Elec. Hoists & Cableways
Archer Iron Works—Concrete Towers and Spouting
Edgcomb Clamp Co.—Concrete Form Clamps
LeROI Engine Co.—Gasoline Engines
The MacLeod Co.—Melting Furnaces & Concrete Heaters
Connaut Shovel Co.—Connaut Special Shovels
Metal Forms Corp.—Sidewalk, Gutter, Road, Rail and Struc-
tural Forms
Mandt Co.—Fordson Loaders, Cranes & Buckets
Buckeye Jack Mfr. Co.—Jacks, all kinds
Sidney Steel Scraper Co.—Drag & Wheeled Scrapers, Concrete
Carts & Wheelbarrows

BECKWITH MACH'Y CO.

PITTSBURGH PHILADELPHIA

Aldrich Road Pumps
Anchor Concrete Mach'y
Baker Maney Scrapers
Beach Portable Saws
Blaw-Knox Equipment
Blystone Mixers
Caterpillar Tractors
Clyde Hoists & Engines
Dobble Derrick Fittings
Farquhar Boilers & Engines
Hains Path Digging Loaders
Humphreys Pumps
Insley Excavators
Insley Towers & Chutes
LaPlant-Chester Wagons
LeROI, Climax, Hercules and
Waukesha Engines

Leo Dump Bodies
Leachon Wire Rope
McKiernan-Terry Hammers
Nagle Boilers
Northern Conveyors
Ord Road Finishers
Pulometer Pumps
Sagen Derricks
Sawerman Cable Ways
Smith Mixers and Pavers
Smith Crushers
Starling Wheelbarrows
Stockland Graders
Sunbury Unloaders
Universal Form Clamps
Wiley Whirlies
Wyoming Shovels

Member: Associated Equipment Distributors

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

DRAVO EQUIPMENT CO.

300 Penn Avenue, Pittsburgh, Pa.

MEAD-MORRISON—Tractors, Car Pullers,
Buckets, Hoists, Crawler Cranes and Shovels.

NOVO—Pumps, Hoists, Engines 1½- to 40-H.P.

MARSH-CAPRON—Rail Track Mixers.

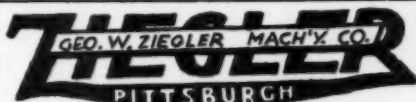
KWIK-MIX—Tilting Mixers.

JOHNSON—Demountable Bins, Hoppers.

JONES-SUPERIOR—Saw Rigs.

BARNES—Portable Air Compressors.

GILMAN—Rock Drills.

**CONTRACTORS' EQUIPMENT**Office and Warehouse
Pittsburgh, Pa.Yards and Shops
Rock, Pa.**REPRESENTING**Austin Mfg. Co.
Austin-Western Road Machin-
ery Co.
Butler Bin Co.
C. H. & E. Mfg. Co.
Papak Block Machine
Hardnag Wonder Drill Co.
Ingersoll-Rand Co.Jaeger Machine Co.
Koehring Co.
Cleveland Tractor Co.
M. & M. Form Clamp Co.
Metal Form Corp.
Monarch Tractors
National Hoisting Engine Co.
Rotary Snow Plow Co.
Rex-Watson Corp.**MARTIN J. O'BRIEN CO., Inc.**

803 Union Bank Bldg.

Pittsburgh, Penna.

Trackshifters—Underground Shovels
Bay City Semi-Circular Cranes
Bay City Skimmers
Heisler Geared Locomotives
Austin Backfillers and Trenchers
Fairmont Mining Machinery
Leahy Vibrating Screens**STANDARD MACHINERY & EQUIPMENT CO.**

SPARTANBURG,

S. C.

R. W. DODGEN, Proprietor.

DISTRIBUTORS FORCummer Asphalt Plants
Multi Foot Pavers
Buffalo-Springfield Rollers
Erie Cranes & Shovels
Hetzl Forms & Finishers
Butler Bins & Hoppers
Barber-Greene Loaders
Hug Trucks & Sub-graders
Jaeger Concrete Mixers
Handy Sack Cleaners & BalersEagle Dump Wagons
Domestic Pumps & Hoists
Whitcomb Locomotives
Western Wheeled Scrapers
Sterling Wheelbarrows
Wyoming Shovels
Bates Crawler Tractors
Sharpsville Storage Tanks
Bollers & Engines
Concrete & Metal Pipe
Cement, Sand & Stone**Pittsburgh Machinery & Equipment
Company**

Fulton Bldg. Pittsburgh, Pa.

Contractors' Machinery

In Stock at Aspinwall, Pa.

ERIE-STEAM SHOVELS
Locomotive Cranes
Dinkey Locomotives
Road Rollers
Hoisting Engines
Concrete Mixers
Pumps, Derricks, Buckets
Rock Crushers**WESTERN MATERIAL COMPANY**
Sioux Falls South Dakota**DISTRIBUTORS:**Caterpillar Tractor Co.
Construction Mch. Co.
Western Wheeled
Scraper Co.
Barber-Greene Co.
Nova Engine Co.
Blaw-Knox Co.
Iowa Mfg. Co.
M & M Form Clamp Co.
Stockland Rd. Mch. Co.
Littleford Bros.La Plant-Choute Co.
Sargent Snow Plows
Carey Roofing and
Elastite
Manhattan Belting
Yellowstrand Wire Rope
Wausau Snow Plows
Sterling Wheelbarrows
Red Edge Shovels
D-A Lubricant
Shawnee Maintainers
All Metal Snow Fence

Member: Associated Equipment Distributors

IN PITTSBURGH!**RUANE MACHINERY CO.**

Warehouse, Office and Yard:

Corner W. Robinson and Dasher Streets

Represents:

RANSOME CONCRETE MACHINERY CO.—

Mixers, Pavers, Chuting Plants.

OSGOOD COMPANY—Steam Shovels.

IDEAL CONCRETE MACHINERY COMPANY—

Concrete Block Plants.

BOOS-MEYER-HECHT COMPANY—

Atlas Adjustable Shores.

O. K. CLUTCH & MACHINERY CO.—

Hoists and Compressors.

CHICAGO AUTOMATIC CONV. CO.—

Portable Conveyors.

ERIE STEEL CONST. CO.—Aggregometers and

Clamshell Buckets.

L.J. BREEDEQUIPMENT CO.

JAMES BUILDING

CHATTANOOGA TENNESSEE

RepresentingNorthern Engineering Company
Orton Crane & Shovel Company
Chicago Pneumatic Tool Company
The Rahn-Larmen Tool Company
Ohio Machine Tool Company
The Fate-Root-Heath Company
Easton Car & Construction Co.
Williamsport Wire Rope Co.
And others.

NIXON-HASSELLE CO.

Chattanooga, Tennessee

CONTRACTORS' EQUIPMENT

Blaw-Knox Buckets and Forms
 C. M. & E. Saw Rigs, Pumps and Hoists
 Cameron Pumps
 Haisc Leaders and Conveyors
 Ingersoll-Rand Compressors
 Rex Mixers and Pavers
 Northwest Cranes and Shovels
 Panestra Steel Baulk
 Archer Tower and Spouting Equipment
 Vulcan Steam and Gasoline Locomotives
 Parsons Trench Machines and Backfillers
 Also Wheelbarrows—Carts—Benders—Outlets—
 Shovels—etc.

"He Profits Most, Who Serves Best."**J. W. BARTHOLOW COMPANY**

Machinery Contractors' Equipment and Supplies

1221 SOUTH LAMAR ST. DALLAS, TEXAS

RANSOME Mixers, Chutes	NORTHWEST Cranes
LE ROI Engines	OWEN Buckets
SABSON Dredges	UNIVERSAL Trunk Crane
NATIONAL Hoists	RANSOME Pavers
AMERICAN Saw Rigs	PLYMOUTH Locomotives
BLYSTONE Plaster Mixer	LAKEWOOD Finishers
DOMESTIC Pumps	LAKEWOOD Road Forms
WYOMING Shovels, Picks	HAISS Loaders
AKRON Wheelbarrows	HONHORST Tar Kettles
WARD Flows	BUTLER Bins
CYCLONE Drills	TUTSMITH Crushers, Screens
SULLIVAN Air Compressor	PARSONS Distributors
ATLAS Shores	McKIERNAN-TERRY Pile Hammers, Jacks, Etc.

MEMBER: Associated Equipment Distributors**R. L. HARRIS**Knoxville
Tenn.

Representing

Buffalo-Springfield Roller Co.
 A. B. Farquhar, Ltd.
 Huber Mfg. Co.
 Burch Plow Works
 Good Roads Machinery Co.
 Foote Concrete Machine Co.
 Construction Machinery Co.
 Western Wheeled Scraper Co.
 Wood Drill Works
 Blaw-Knox Co.
 Caterpillar Tractor Co.
 Erie Steam Shovel Co.
 Domestic Engine & Pump Co.
 Ingersoll-Rand Co.
 Lakewood Engr. Co.
 La Plant-Chaste Mfg. Co.
 Russell Grader Mfg. Co.
 Rex-Watson Corp.
 Wyoming Shovel Works

Member: Associated Equipment Distributors**W. A. BROWNING MACHINERY Co.**

205 Exposition Ave.

Dallas, Texas

Representing

Orton Crane & Shovel Co.
 Barber-Greene Company
 C. H. & E. Manufacturing Co.
 Sterling Wheelbarrow Co.
 Jaeger Machine Company
 American Cement & Machine Co.
 Chicago Pneumatic Tool Co.
 Rex-Watson Corporation
 Heitzel Steel Form & Iron Co.
 Mandt Company
 Foote Concrete Machinery Co.
 Buffalo-Springfield Roller Co.
 Littleford Bros.

HARVILL SUPPLY COMPANY

415 Commerce Street

NASHVILLE

TENNESSEE

Jaeger Machine Co., Concrete Mixers.
 Sullivan Machy. Co., Air Compressors,
 Rock Drills.
 Byers Machine Co., Cranes, Shovels.
 Iowa Manufacturing Co., Rock Crushers.
 Novo Engine Co., Gasoline Engines,
 Pumps and Hoists.
 Charles Hvass & Co., Street Sweepers,
 Sprinklers, Etc.

SHEEHAN & COMPANY

Steel Products and Contractors' Equipment

1615 Bassett Avenue

El Paso, Texas

REPRESENTING

T. L. Smith Co.	Insley Mfg. Co.
Smith Eng. Works	The Parsons Co.
Barber-Greene Co.	Acme Road Mch. Co.
Northwest Eng. Co.	Ingersoll-Rand Co.
Climax Eng. Co.	Sauerman Bros.
The Le Roi Co.	The Sterling Wheel-
J. D. Adams & Co.	barrow Co.
Monarch Tractors	Barnes Mfg. Co.

Wilson-Weesner-Wilkinson Co.

NASHVILLE

TENNESSEE

REPRESENTING

Koehring Co.
 Blaw-Knox Co.
 Barber-Greene Co.
 Clyde Iron Works
 Construction Machy. Co.
 C. H. and E. Mfg. Co.
 Western-Wheeled Scraper Co.
 Austin-Western Rd. Machy. Co.
 A. W. French Co.
 Littleford Bros.
 Ingersoll-Rand Co.

*Warehouse Stock and Service.***R. B. EVERETT & CO.**

3112-3118 Harrisburg Boulevard, Houston, Texas

Representing:

Lakewood Eng. Co.—Concrete Mixers, Handling Equipment.
 Erie Steel Construction Co.—Batcher Plants.
 Clyde Iron Works Sales Co.—Hoisting Machinery.
 Harnischfeger Corp.—Gasoline Cranes, Draglines, Shovels, etc.
 Universal Form Clamp Co.—Form Clamps.
 McKiernan-Terry Drill Co.—Pile Hammers, etc.
 Novo Engine Company—Gasoline Engines and Outfits
 Littleford Brothers—Asphalt Kettles and Tools.
 Wyoming Shovel Works—Red Edge Shovels and Picks.
 Cleveland Wheelbarrow Co.—Red Star Wheelbarrows.
 Bates Valve Bag Co.—Wire Reinforcing Ties.
 Lee Trailer & Body Co.—Trailers and Dump Bodies.
 Patent Scaffolding Co.—Safety Springing Scaffolds.
 Barber-Greene—Conveyors, Ditchers, and Wagon Loaders.
 Buffalo Springfield Roller Co.—Road Rollers.
 Sullivan Machy. Co.—Air Compressors.
 Cyclone Fence Co.
 Sauerman Bros.—Cableways, etc.

Member: Associated Equipment Distributors

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

F. W. GARTNER COMPANY

3315 McKinney Avenue HOUSTON, TEXAS

Contractors' Equipment

Box Mixers & Pavers
Blaw Knox Batchers plants,
Chambers Bldg., Turn Tables
and Buildings
Curbside Lights
Climax Trustworthy Engines
Le Roi Engines
Hogers Brothers Trailers
Hris Road Rollers
Parsons Trenching Machines,
Backfillers
Northwest Crawlers, Cranes,
Gas Shovels, Draglines
Archer Concrete Equipment
Koppel Industrial cars
Geo. Halse Loaders, Conveyors

C. H. & E. Pumps, Saw Rigs
Hoists
Mathews Gravity Conveyors
Page Dragline Buckets
National Hoist Engines, Pile
Hammers
Edwards Bar Cutters, Banders
Eagle Dump Wagons
Blystone Mixers
Honhorst Kettles
Roughan Paving Gauge
Abram Cement Tools
MacLeod Oil Burners
M & M Form Clamps
Hercules Engines
Plymouth Locomotives
Mundie Air Compressors

LEWTER F. HOBBS Inc.National Bank of Commerce Bldg.
Norfolk Virginia**CONTRACTORS' EQUIPMENT**

Knickerbocker—Concrete Mixers, Saw
Rigs, Mortar Mixers.
Penna. Asphalt Plants.
Stroudsburg Hoists.
Speeder Cranes.
Hotchkiss Forms.

WILSON**TANK & CULVERT CO.**

520-26 Carolina St. San Antonio, Texas

REPRESENTING:

Thew Shovel Co.,
Barber-Greene Co.
Austin Western Road Machinery Co.
Stewart Iron Works Co.
and many other lines relative to road, street, water
works and sewer building and installation.

**GRAHAM BRIGHT
SALES COMPANY, Inc.**

901 Electric Bldg. Richmond, Va.

REPRESENTING

The Harnischfeger Corporation
The T. L. Smith Company
The Domestic Engine & Pump Company
The Boston Car & Construction Company
The George D. Whitcomb Company
The Acme Road Machinery Company
The Chicago Automatic Conveyor Company
The Russell Grader Mfg. Company
The Clyde Iron Works
The Erie Steel Construction Company
The Hotchkiss Steel Products Company
And Other Well Known Manufacturers

THE C. H. JONES COMPANY**Contractors' and Railway Equipment**

206 So. West Temple St., Salt Lake City, Utah

Representing

The Jaeger Machine Co., Concrete Mixers and Pavers.
Lakewood Engr. Co., Road and Construction Equipment
Chain Belt Co., Chains, Sprockets, Elevating Machinery.
Northwest Engr. Co., Cranes, Draglines and Shovels.
H. W. Caldwell & Son Co., Conveying & Transmission Machy.
Link-Belt Co., Cranes, Draglines and Shovels.
U. S. Cast Iron Pipe & Fdry. Co., Water Works Supplies.
The Diamond Rubber Co., Belting, Hose and Packing.
The Buda Co., Track Supplies, Railway Equipment.
Wm. H. Keller, Inc., Pneumatic Tools and Accessories.
The Master Builders Co., Concrete Hardeners.
Chicago Perforating Co., Perforated Metals of all kinds.
Interstate Iron Steel Co., Iron, Steel Products.
Stocks are carried in our Salt Lake warehouse and we solicit
your inquiries and orders.

EARNEST BROS.

805 E. Franklin St., Richmond, Va.

REPRESENTING

KOEHRING Mixers, Pavers, Cranes, Shovels, Bar
Cutters and Banders.
BLAW-KNOX Steel Forms, Steel Bins, Measur-
ing Batches, Chambers Buckets, Truck
Turntables, Inundation.
C. H. & E. Power Pumping Outfits, Saw Rigs, etc.
KEYSTONE Excavators, Gas and Steam Shovels.
ORD Finishing Machine.
INSLEY Mfg. Co.
MUNDY Hoisting Engines.
AND OTHER WELL KNOWN PRODUCTS

GENERAL UTILITIES CO., Inc.

256 Tazewell St. Norfolk, Virginia

Representing

Chain Belt Co.	C. S. Johnson Co.
Barber-Greene Co.	Charles Hyatt & Co.
Pate-Root-Heath Co.	Barnes Mfg. Co.
Heltzel Steel Form & Iron Co.	Lee Trailer & Body Co.
Byers Machine Co.	Northwest Eng. Co.
Huber Mfg. Co.	Atia Corp.
Elgin St. Sweeper Co.	Signs of Safety Co.
Luck Sewer Equip. Co.	Sasgen Derrick Co.
	Archer Iron Works

Member: Associated Equipment Distributors

GEO. E. HOPPE801 McDonough Street
RICHMOND, VA.**Representing**

Barnes Manufacturing Co.
Cement Block Machinery Co.
D-A Lubricant Co.
Geo. Halse Manufacturing Co.
Jaeger Machine Co.
The Link-Belt Co.
Norlene Motor Oils
Van Guilder System Conc. Bldgs.
Member: Associated Equipment Distributors

Southern Machinery & Supply Co. Roanoke - : - Virginia

"All Kinds of Machinery"

REPRESENTING

The Osgood Company
Vulcan Iron Works
Ingersoll-Rand Co.
Chain-Belt Company
The Movo Engine Co.
Insley Manufacturing Co.
Geo. Haiss Manufacturing Co.
Curtis Pneumatic Machinery Co.
Union Steam Pump Co.
Littleford Bros.
Orr & Sembower

Contractors' Equipment in Stock in our Roanoke Warehouse.

GENERAL MACHINERY CO.

Engineers and Machinery Merchants
SPOKANE, WASH.

Agents for High-Grade Equipment

Harnischfeger Corp.
C. D. Edwards Mfg. Co.
Ransome Concrete Machinery Co.
Hercules Motor Corp.
Chicago Pneumatic Tool Co.
De Laval Steam Turbine Co.
John A. Roebbling Sons' Co.
Acme Road Mch. Co.
Speeder Machy. Corp.
Geo. Haiss Mfg. Co., Inc.

Members: Associated Equipment Distributors

GEIJSBEEK ENGINEERING COMPANY

912 Arctic Bldg. Seattle, Wash.

REPRESENTING:

Buckeye Traction Ditchers & Excavators
Plymouth Gasoline Locomotives
Williams Hammer Crushers
Chase Industrial Cars
Hardinge Cone Grinding Mills
Pumps, Compressors
Contractors Scientific Instruments

HOFIUS-FERRIS EQUIPMENT CO.

1118-1124 Ide Avenue

SPOKANE, WASHINGTON

Distributors:

Caterpillar Tractors	RED EDGE Shovels
Russell Graders	Williams Buckets
Erie Shovels	Movo Engines and Out-
Rex Mixers and Pavers	fits
Sterling Wheelbarrows	Saagen Derricks
Logging and Construction Machinery.	

Member: Associated Equipment Distributors

Pacific Hoist & Derrick Co.

Machinery and Equipment

818 First Avenue South Seattle

Distributor

Minneapolis Steel & Machy. Co.—Twin City Gasoline Engines.
Blaw Knox Co.—Clam Shell Buckets, Steel Forms and Prudential Steel Buildings.
G. D. Whitcomb Company—Gas Locomotives.
Page Engr. Co.—Scraper Buckets.
Buckets.
Pioneer Bucket Co.—Black Line Buckets.
Mundy Hoisting Equipment—Hoisting Machinery
Insley Mfg. Co.—Conc. Placing Equip., Derricks.
Northwest Eng. Co.—Crawler Cranes, Shovels, Draglines.

Member: Associated Equipment Distributors

Clarksburg Supply & Equipment Co.

Clarksburg, W. Va.

Representing:

Truscon Products
Troy Wagon Works
Trailers and Wagons
The Carborundum Company
Rubbing Stones
The Dow Chemical Company
Calcium Chloride
Albert Grauer Company
Sidewalk Lights
Martin Steel Products Company
Steel Culverts
Ransome Concrete Machinery Company
Concrete Mixers

STAR MACHINERY CO.

1741-1st Ave. So. Seattle, Wash.

CONTRACTORS' EQUIPMENT

Representing

Wonder Concrete Mixers, Hoists, etc.
Twentieth Century Mixers
Ideal Concrete Block Machinery
Silver Band Saws, Saw Tables, etc.
Irrington Swing Saws and Saw Tables
Curtis Air Compressors and Fordson Unit
Westinghouse Motors

WEST VIRGINIA MINE SUPPLY CO.

CLARKSBURG, W. VA.

"Everything for the Contractor"

REPRESENTING

Osgood—Steam and Gas Shovels and Cranes
Movo—Engines, Pumps and Hoists
Sullivan—Portable Air Compressors and Tools
Rex—Pavers
Schramm—Air Compressors
Western—Whealers, Drags and Plows
Wood's—Molybdenum Shovels
Burch—Stone Spreaders and Unloaders
Kwik-Mix—Tilting Drum Concrete Mixers
O. & S.—Steam Engines and Boilers
Goulds—Pumps, All Styles
Sterling—Wheelbarrows
Drill Steel, Jackhammers, Shovels, Tools, Supplies, etc.
Atlas Explosives and Blasting Supplies.

Banks-Miller Supply Company Huntington, W. Va.

Representing
Austin Western Graders, Crushers, Drags, Burch Unloaders and Spreaders, Carey Expansion Joint, Caterpillar Tractors and Parts, Drain Pipe, Reinforcing Steel, Farquhar Engines and Boilers, Handy Cement Sack Cleaners, Blaw-Knox Steel Road Forms, Ingersoll-Rand Compressors and Drills, Knickerbocker Concrete Mixers, Multi-Foot Pavers, New Holland Stone Crushers, Northwest Gasoline Shovels, Nove Pumps, Mundy Hoists, Rex-Watson Dump Wagon, Wonder Concrete Mixers.

E. A. Drott Tractor Co.

Plankinton Arcade Building

Milwaukee

Wisconsin

REPRESENTING

"Caterpillar" Tractors—Caterpillar Tractor Co.
Wausau Snow Plows —Hi-way Service Corp.
Baker Maney Scrapers —Baker Mfg. Co.
Big Red Snow Fence —Illinois Wire & Mfg. Co.

BOEHCK MACHINERY CO., INC.

2404-06 Clybourn St., Milwaukee, Wis.
Isley—Steel Towers, Steel Derrick, Elevators
T. L. Smith—Concrete Mixers, Concrete Pavers
Allen-Chalmers—Crushers, Pumps, Motors, Compressors
G. H. Williams—Clamshell Buckets
Mundy Hoisting Equipment—Hoisting Engines
L. P. Green—Drag Scraper Buckets
Nove Engine Co.—Gas Hoists, Compressors, Pumps, etc.
Ingersoll-Rand Co.—Rock Drills, Compressors, etc.
J. P. Curry Co.—Wire Ties and Tools
H. W. Ross Co.—Roadshores
Symons—Column Clamps
Waukegan Motor Co.—Industrial Power Units
Snow-King—Heavy Snow Plows
Link-Belt Co.—Conveyors
Flinn—Black Line Buckets
Mead-Morison—Tractors
Rex-Watson—Wagons
Jones Superior Woodworkers
Member: Associated Equipment Distributors

ENGINEERS AND CONTRACTORS SUPPLY CO.

Office:
228 - 3rd St.,
Milwaukee, Wis.

Warehouse:
West Allis,
Wis.

DISTRIBUTORS FOR WISCONSIN

Anchor Concrete Machinery Co.
Blystone Manufacturing Co.
Remmel Manufacturing Co.
Complete Concrete Product Plant Equipment.
Complete Contractors' Equipment.
Milwaukee Stock.

CHADWICK BROS. CO.

CONTRACTORS' EQUIPMENT

2430 CLYBOURN ST. MILWAUKEE

Phone: West 7070

BYERS BEARCAT Shovels, Ditchers, Skimmers and Cranes
LEACH Mixers, Pavers
HELTZEL Batchers and Bins
STEEL Forms
OWEN Buckets
B A B E E R-GREENE Loaders, Trenchers, Portable and Permanent Conveyors
LEE Gravity Dump Bodies
"CLETRAC" Tractors

HUNTER MACHINERY CO.

MILWAUKEE, WIS.

Warehouse, Shop and Office on 16th St. Viaduct near S. Canal St.

Carrying in Stock
Chain Belt Mixers
Clyde Hoists
Blaw-Knox Buckets, Bins and Road Forms
Northwest Cranes and Shovels
Leechen Wire Rope
Atlas Engr. Co. Conveyors
Parsons Tranching Machines
Sageen Derricks
Lafol Engines
Western Wheeled Scrapers
Carbis Lights
Sullivan Compressors
Davenport Locomotives
Wisconsin Motor Co., Power Units
Atlas Adjustable Shores
Ransome Concrete Machinery Co., Concrete Chuting Equipment
Syntren Electric Hammers
Buffalo-Springfield Rollers
Highway Trailer Co., Trailers
Ord Concrete Road Finishing Machines
Barnes Mfg. Co. Pump's Outfits

Member: Associated Equipment Distributors

Cunningham - Ortmayer - Company

14 Grand Avenue Milwaukee, Wis.

DISTRIBUTORS

Lakewood—Road Finishers, Subgraders, Chuting Equipment, etc.
Rutler—Bins and Measuring Devices
Wyoming—Red Edge Shovels, Scoops and Picks
MacWhyte—Wire Rope
Wehr—Rollers, Power Graders
Universal—Truck Cranes
Hauck—Heaters
Austin—Trenching Machines and Backfillers
Union Iron Works—Piling and Tunneling Equipment
Carey—Elastic Joints and Building Materials
Little Red Wagon—Scrapers and Elevating Graders
Northern—Conveyors and Bag Cleaners
Goulds—Pumps of All Types
Milburn—Carbide Lights
American—Drag and Slackline Buckets
Electric—Poulsen Rubber Tired Wheels, Trailers, Crawlers
Hug—Road Builders' Trucks
Wonder—Concrete Mixers
Little Giant—Cranes
Member: Associated Equipment Distributors

GEORGE H. MUELLER CO.

6092 Plankinton Arcade Bldg., Milwaukee, Wis.

Representing:

KOEBRING CO.
Concrete Mixers and Pavers
Bar Cutters and Benders
Cranes, Draglines and Shovels
Subgraders
C. H. & E. MFG. CO., INC.
Hoists
Pumps
Elevator Cages
Saw Rigs
Mortar Mixers
JAEGGER MACHINE CO.
Concrete and Plaster Mixers
Placing Plants
BHEB
All Steel Hand Hoists

Mullins Body & Tank Company

47th Avenue and Rogers Street
MILWAUKEE, WIS.

Wisconsin Distributors for:

WOOD-DETROIT Hydraulic Hoists,
Automatic Gravity Bodies.

SAFTEE Hand Hoists and bodies.

Mead-Morrison Motor Truck Winches.

MUSSENS LIMITED

Montreal, Canada

Toronto — Winnipeg — Vancouver

Representing

Busyrus Shovels	Vulcan Locomotives
Western Wheel Scraper Co.	T. L. Smith Company
Sterling Wheelbarrow Co.	Elgin Motor Sweepers
Reading Chain & Block Corp.	Norton Jacks
Linn Tractors	Marsh Hoists
Humding Pump	Byers Machine Company
Pulsometer Pumps	Barber-Greene Company
Burch Spreaders	Morse Diving Apparatus
	Heltzel Steel Forms

LAWRENCE-GOODLING CO., Inc.
161-165 N. Water St. Mobile, Ala.

Representing

Gallon Iron Wks. & Mfg. Co.—Road Machines,
Road Rollers, etc.

A. B. Farquhar Co., Ltd.—Saw Mills, Boilers and
Engines.

Sidney Steel Scraper Co.—Wheelers, Drag Scrap-
ers, Road Plows, etc.

Gordon Hollow Blast Grate Co.—Grates, etc.

Henry Disston & Sons—Saws

Oliver Ames Corporation—Shovels

Ransome—Concrete Mixers

*If you are located in Western Florida, Southern
Mississippi or Alabama let us serve you.*

Examples of Savings

Send for our booklet illustrating the
savings accomplished with Milburn
Apparatus in the repair and mainte-
nance of construction equipment. A
single idea may save you time,
money and tools.

Write for section L

THE ALEXANDER MILBURN CO.
BALTIMORE, MD.

Note our Distributors on the preceding pages

TURNER SUPPLY COMPANY

N. W. Corner St. Louis & Commerce Sts.,
MOBILE REPRESENTING ALABAMA

American Steel & Wire Co.

Monitor Wire Rope

Link Belt Co.

Conveyor Transmission Equip.

Simonds Saw and Steel Co.

Yale & Towne Mfg. Co.

Hand and Electric Hoist

Worthington Pump & Machy.

Pumping Machinery

Fairbanks Morse & Co.

Sheffield Hand & Push Cars

Fairmont Motor Cars.

Railroad Motor Cars

U. S. Chain & Forging Co.

Conveyor and Coil Chain

Union Steam Pump Co.

Burnham Pumps

Lansing Co.

Barrows, Trucks, etc.

American Sawmill Machy. Co.

Sawmill Equipment

Orr-Sembower Co.

Engines, Boilers and Concrete

Mixers

Western Wheel Scraper Co.

Contractors Road Equipment

American Rolling Mill Co.

Genuine Armo Ingot Iron

Wyoming Shovel Co.

Red Edge Shovel & Scoops

UNION WATER METER CO.

Worcester, Mass.

Union Water Meter Company is one of the few
American manufacturing concerns that has pro-
gressed sixty years under the same ownership. This
pioneer company began in the early sixties and
incorporated in 1868 the organization which has
won a place of leadership in the manufacture of
water meters, valves, stops, pipe lining equipment
and fire whistles. Catalog G-57 sent on request.

New York Office: 50 Church St.

Philadelphia Office: 539 Real Estate Trust Bldg.

CORNELL TRACTOR CO.

227 The Alameda,
San Jose, Calif.

363 Main St.
Salinas, Calif.

Distributors

Caterpillar

Killefer

Killefer

Russell

D-A

Tractors

Road Machinery

Farm Machinery

Road Machinery

Tractor Lubricant

ALDRICH

THE ALDRICH PUMP COMPANY

FOOT OF PINE STREET

ALLENTOWN, PENNA.

REPRESENTATIVES WANTED

Single Section

Double Section

CENTRIFUGAL

Single Stage

Multi Stage

PUMPS

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

DIXON'S GRAPHITE JOINT COMPOUND



Does not "set" or harden. Makes absolutely tight joints. Joints may be easily opened at any time. Saves time, fittings and tools.

Recommended for all threaded or faced joints of steam, water, gas, oil and air piping. It resists heat, cold, acids and alkalis and protects joints from corrosion.

Write for Circular 148-D.

JOSEPH DIXON CRUCIBLE CO.

Jersey City, N. J.



Established 1827

THE EUCLID SCRAPER

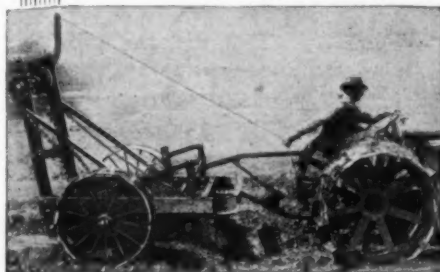
is not an ordinary scraper. If you are interested in moving more earth at less cost, don't fail to write today for literature on this speedy, efficient and economical scraper.

The Euclid Crane & Hoist Co.

108 Chardon Rd.

Euclid, Ohio

Offices in all principal cities



INDEX TO ADVERTISERS IN THIS ISSUE

This index is published as an aid to the reader, but the publishers assume no responsibility for errors or omissions.

Aberthaw Company.....	161	Boehck Machy. Co., Inc.....	179	Complete Machy. & Equip. Co..	168
Abram Cement Tool Co.....	130	Bond Co., The.....	161	Conard & Buzby.....	146
Acme Road Machinery Co.....	116 B	Borchert Ingersoll Co.....	164	Conboy Co., John A.....	173
Aeroli Burner Co.....	134	Borden & Remington Co.....	162	Concrete Machy. & Supply Co..	154
Akron Barrow Co.....	96	Boston & Lockport Block Co..	148	Concrete Surf. Machy. Co.....	102
Alamo Engine Co.....	110	Brandeis Machy. & Supply Co..	160	Connelly & Co.....	106
Aldrich Pump Co.....	180	Breed Equipment Co.....	175	Construction Machy. Co. of Cal	154
Alexander, Edgar.....	157	Brewster & Williams, Inc.....	169	Continental Motors Corp.....	116 A
American Cement Machine Co..	140	Bright Sales Co., Inc., Graham..	177	Contractors Equipment Co.....	163
American Hdw're & Equip. Co..	169	Brooks Co., R. B.....	168	Contractors Equipment Co., Inc.	154
American Saw Mill Machy. Co..	136	Brown-Bevis Co., Inc.....	151	Cornell Tractor Co.....	180
American Steam Pump Co.....	104	Brown, Fraser & Co.....	155	Coulter-Hart Equip. Co.....	157
Anderson Tool & Supply Co.....	162	Brown, Thos. M.....	161	Craven, E. F.....	170
Anthony Company.....	128	Brown & Sites Co.....	168	Crum Machinery Corp.....	156
Armstrong & Bros., Co., R. S..	157	Browning Machy. Co., W. A.....	176	Cunningham, Ortmayer Co.....	179
Atlas Engineering Co.....	144	Buckeye Traction Ditcher Co....	91	Curd Equipment Co., Geo. B....	170
Austin Machy. Co., W. E.....	157	Buffalo-Springfield Roller Co....	127	Dallett Co., The.....	104
Austin-Western Road Machy. Co.	116	Buhl Co.....	134	D-A Lubricant Co., Inc.....	122
Avery, O. B.....	165	Bunting Hardware & Machy. Co..	165	Davis Engineering Co., C. B....	151
Bacon Co., E. R.....	154	Burch Plow Works.....	124	Day & Maddock Co.....	170
Bacon Engineering Sales Co.....	170	Burnite Machy. Co.....	155	De Huff & Hopkins.....	173
Baker Mfg. Co.....	118	Burriss-Clark Machy. Co.....	157	Denver Rock Drill Mfg. Co.....	148
Bakstad Machy. Co.....	158	Byers Machine Co.....	89	Dixon Crucible Co., J.....	181
Banks-Miller Supply Co.....	179	Carbie Mfg. Company.....	126	Dixie Machinery Co.....	161
Barber Asphalt Co.....	184	Case, George D.....	167	Dobbie Foundry & Machine Co..	136
Barber-Greene Co.....	21	Caterpillar Tractor Co.....	23	Dodge, C. R.....	161
Barrett Co.....	85	Cement Block Machy. Co.....	138	Doan-Tucker Smith Equipment	
Barret Thos. L.....	160	Chadwick Bros. Co.....	179	& Supply Co.....	158
Bartholow Co., J. W.....	176	C. H. & E. Mfg. Company.....	128	Domestic Engine & Pump Co..	121
Bates Mfg. Co.....	123	Chausse Oil Burner Co.....	140	Dopp & Co., J. W.....	163
Bates Valve Bag Co.....	87	Chicago Automatic Conveyor Co..	38	Dow Chemical Co.....	133
Bay City Dredge Works.....	183	Clarkburg Supply & Equip. Co..	178	Dravo Equip. Co. 158-168-170-173-175	
Beattie Machinery Co.....	162	Cleveland, Lou B.....	169	Drott Tractor Co., E. A.....	179
Beaver Mfg. Co.....	109	Cleveland Tractor Co.....	25	Dyar Sales & Machy. Co.....	162
Becker, A. F.....	167	Climax Engineering Co.....	107	Eagle Pencil Co.....	118
Beckwith Machinery Co.....	174	Clinton & Heid.....	155	Eagle Wagon Works.....	148
Belle City Mfg. Co.....	120	Clyde Co.....	160	Earnest Bros.....	177
Bingham, J. I.....	167	Clyde Equipment Co.....	172	Easton Car & Construction Co..	95
Blaw-Knox Co.....	13	Clyde Iron Works Sales Co.....	111	Edeken & Boyer Co.....	174
Blystone Mfg. Co.....	112	Coast Machinery Corp.....	151	Engineering Products Co.....	155-158
Boardman Co., The.....	172	Collins Kay Machinery Co.....	164	Engineers & Con. Supply Co....	179

(Continued on page 182)

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

INDEX TO ADVERTISERS IN THIS ISSUE

(Continued from page 181)

Equitable Asphalt Main. Co.....	38	Lake Co., F. D.....	163	Rossiter Co., Edgar A.....	146
Erickson Co., Inc., H. E.....	164	Lakewood Engr. Co.....	119	Ruane Machinery Co.....	175
Erie Steam Shovel Co.....	7	Lane Equipment Co., T. J.....	172	Russell Grader Mfg. Co.....	140
Estick & Co.....	154	Lanning Company.....	138		
Eucild Crane & Hoist Co.....	181	La Plant-Choate Mfg. Co.....	126	Sagen Derrick Co.....	148
Everett & Co., R. B.....	176	Latture Equipment Co., J. L.....	173	Sauerman Bros.....	142
Everhot Mfg. Co.....	124	Lauson Mfg. Co., John.....	114	Schaefer Wagon Wks., Gustav.....	125
		Lawrence-Goodling Co., Inc.....	180	Schramm, Inc.....	114
Feenaughty Machinery Co.....	172	Lean Co., Roderick.....	132	Schert-Milburn Co.....	171
Field & Son, Inc.....	172	LeRoi Company.....	113	Service Equipment Co.....	174
Fife Equipment Co., George W.....	159	Littleford Bros.....	118	Service Supply Co.....	174
Fishback, D. E.....	157	Llewellyn Inc., L. D.....	157	Shannon & Co., Jacob J.....	174
Fitzgerald, Paul.....	155	Lockett & Co., A. M.....	180	Sheehan & Co.....	176
Flory Mfg. Co.....	134	Loggers & Contractors Machy. Co.....	173	Shreveport Machy. & Sales Corp.....	161
Ford Power Equip. Exposition.....	35	London Concrete Machy. Co., Ltd.....	155	Smith-Booth-Usher Co.....	154
Frang, Lawrence V.....	165	Long, Fred A.....	156	Smith & Co., Geo. F.....	166
Fuchs Equipment Co.....	166	Louder Co., W. B.....	158	Smith Co., T. L.....	142
Full-Crawler Co.....	17	Louis, John C.....	161	Smith Engineering Works.....	44
Fuller & Sons Mfg. Co.....	2	Louisiana Rd. Machy. Co.....	180	Suare Corporation, Fredrick.....	146
Funkhouser Equipment Co.....	165	Lyons Machinery Co., Inc.....	151	Solvay Process Co.....	131
				Southeast Supply Co.....	157
Gallon Iron Works & Mfg. Co.....	136	McCraken-Ripley Co.....	173	Southern Machy. & Supply Co.....	178
Garlinghouse Bros.....	154	McCurdy, U. B.....	169	Southern States Equipment Co.....	160
Gartner Co., F. W.....	177	McDonald & Burghen.....	156	Spears-Weils Machy. Co., Inc.....	104
Geisbeek Engr. Co.....	178	McKiernan-Terry Drill Co.....	15	Staley & Morris, Inc.....	174
General Machinery.....	178	McNeilly, John.....	171	Standard Machy. & Equip. Co.....	175
General Motors Truck Co.....	103	Mack Trucks, Inc.....	112	Standard Oil Co. of Ind.....	135
General Utilities Co.....	177	Malvese & Company, Geo.....	167	Standard Scale & Supply Co.....	11
Gierke-Robinson Co.....	159	Marion Steel Body Co.....	144	Stanley & Gill Machinery Co.....	156
Giles & Ransome.....	174	Martin Machinery Co., E. A.....	165	Star Machinery Co.....	178
Ginsberg-Penn Co., Inc.....	168	Mead-Morrison Mfg. Co.....	127	Steinbarger Co., H. N.....	156
Godwin Co., W. S.....	140	Meadows Inc., W. R.....	161	Stewart Iron Works Co.....	140
Good Roads Machy. Co.....	40-41	Meyer Co., Henry H.....	161	Stitch & Elliott.....	171
Good Roads Supply Co.....	101	Miami Trailer-Scraper Co.....	132-140	Stover Mfg. & Engine Co.....	128
Graham Bros.....	101	Milburn Co., Alex.....	180	Street Bros. Machine Works.....	31
Green & Co., G. S.....	168	Miller Equipment Co.....	169	Sullivan Machinery Co.....	132
Hadfield-Penfield Steel Co.....	37	Minneapolis Equipment Co.....	164	Superior Body Corp.....	126
Hais Mfg. Co., Geo.....	130	Minnesota Equipment Co.....	164	Superior Supply Co.....	159
Hale & Co., Wm. H.....	164	Moore, A. B., Jr.....	158		
Hall, Frank E.....	168	Moore Equip. Co., H. W.....	156	Texas Co., The.....	137
Hardsoeg Wonder Drill Co.....	125	Mueller Co., Geo. H.....	179	Toledo Wheelbarrow Co.....	81
Harnischfeger Corp.....	119	Mullins Body & Tank Co.....	180	Trevor Co., H. B.....	167
Harris, R. L.....	176	Mundy Sales Corp.....	115	Truscon Steel Co.....	5
Harron, Rickard & McCone Co.....	155	Mussens, Ltd.....	180	Tulley Equipment Co.....	166
Harvill Supply Co.....	165			Turner Supply Co.....	180
Hatcher Co., S. T.....	165	Nafziger, S. O.....	138	Turner, John D.....	151
Hauck Mfg. Co.....	136	National Supply Co., The.....	172	Twin Disc Clutch Co.....	116
Haverstick & Co., Inc.....	169	Neely & Co., J. C.....	170	Tyler Co., N. B.....	162
Hawley Tie Bolt Co.....	134	Nelson Iron Works, N. P.....	122		
Hedge & Mattheis Co.....	162	Neptune Meter Co.....	141	Union Iron Works.....	126
Heil Co., The.....	120	Newark Concrete Pipe Co.....	144	Union Water Meter Co.....	180
Heitzel Steel Form & Iron Co.....	99	Newport Culvert Co.....	139	Universal Hoisting Mch. Corp.....	134
Hercules Corporation.....	117	Nixon-Hasselle Co.....	156	Universal Road Machinery Co.....	124
Hercules Motors Corp.....	79	Noble Co., K. B.....	156	U. S. Cast Iron Pipe & Fdy. Co.....	105-148
Hercules Powder Co.....	104	Northwest Equip. Co., Inc.....	166		
Herr, Henry R.....	173	Norton Co., J. B.....	169	Van Keppel, G. W.....	165
Highway Trailer Co.....	106	Novo Engine Co.....	132	Van Keppel & Co., J. R.....	172
Hill, Nicholas R.....	146			Vulcan Iron Works.....	142
Hobbs, Inc., Lewter F.....	177	O'Brien Co., Inc., Martin J.....	175		
Hofius-Ferris Equipment Co.....	178	Olsen, Ole K.....	160	Wallace & Tiernan Co., Inc.....	145
Honhorst Co., Jos.....	148	O. K. Clutch & Machy. Co.....	118	Ward Co., Lee T.....	174
Hoppe, Geo. E.....	177	Orton Crane and Shovel Co.....	9	Waterhouse, Clifford.....	164
Hotchkiss Steel Prod. Co.....	126			Weber Implement & Auto. Co.....	166
Howard-Cooper Corp.....	173	Pacific Flush-Tank Co.....	134	Waukesha Motor Co.....	83
Hower, J. Shuman.....	169	Pacific Hoist & Derrick Co.....	178	Western Block Co.....	142
Hubbard-Floyd Co., Inc.....	168	Pattison Supply Co., W. M.....	171	Western Contractors Supply Co.....	159
Huber Manufacturing Co.....	121	Peden Equipment Co.....	171	Western Material Co.....	175
Humphreys Mfg. Co.....	130	Pegg, E. F.....	171	Western Supply Co.....	166
Hunter Machy. Co.....	179	Pennsylvania Cement Co.....	144	West Michigan Equipment Co.....	163
Hyland Co., R. H.....	158	Perine & Co.....	146	West Virginia Mine Supply Co.....	178
		Perkins Co., P. I.....	162	Wettlauffer Bros.....	163
Ingeniero, Joaquin M. de Uriarte.....	166	Perry Company, The.....	99	Whayne Supply Co., R. C.....	180
Inslay Manufacturing Co.....	42	Phillips Inc., Jas.....	167	Wheeler Murray Co.....	167
Interstate Machy. & Supply Co.....	167	Pioneer Tractors, Inc.....	130	Whitcomb Co., Geo. D.....	97
Jackson Mfg. Co.....	124	Pittsburgh Machy. & Equip. Co.....	175	Wiard Flow Co.....	132
Johns Equipment Co., E. W.....	159	Pittsburgh Meter Co.....	142	Wilkins, J. D.....	171
Johnston Bros., Inc.....	102	Pope Equipment Co.....	171	Williamsport Wire Rope Co.....	29
Jones Co., C. H.....	177	Power Equipment Co.....	159	Wilson, J. Walker.....	172
Keiley Co., E. B.....	169			Wilson Machinery Co.....	158
Kellogg-Burlingame Co.....	163	Queen City Supply Co.....	170	Wilson, Tank & Culvert Co.....	177
Kenney, G. C.....	165			Wilson-Wessner Wilkinson Co.....	176
Kentucky Rock Asphalt Co.....	129	Rabbitt, C. F.....	166	Wolverine Concrete Machy. Co.....	163
Keystone Driller Co.....	39	Ransome & McClelland, Inc.....	155	Wood Hydraulic Hoist & Body Co.....	110
Kiel Machine Company.....	136	Ransome Concrete Machy. Co.....	93		
Kiesler Co., Jos. F.....	136	Rex-Watson Corp.....	142	Yancey Bros.....	158
Knox Engineering & Equip. Co.....	159	Rogers & Co., F. L.....	138	Young & Van Supply Co., The.....	151
Koehring Co.....	27-39	Rogers Bros., Corp.....	123		
Koppel Indus. Car & Equip Co.....	108	Roshalt Co., T. W.....	164	Zetterlund Hoist & Mach. Co.....	108
Kuhlman & Co., W. A.....	122-173			Ziegler & Co., Inc., Wm. H.....	164
				Ziegler Machy. Co., Geo. W.....	175

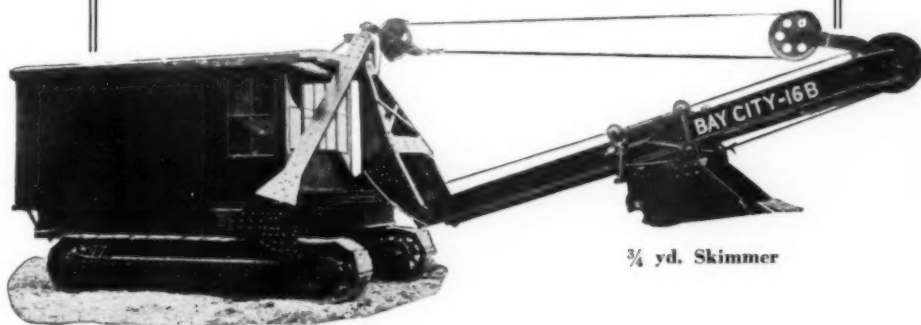
For Directory of Consulting & Contracting Engineers, Landscape Architects, Etc., see pages 146, 147, 148.



A Difficult Cut Made Easily With the Bay City 16-B Skimmer

It was not an easy job—this ripping out of old concrete 6" thick, with a 3" asphalt top, for the new trolley tracks in Newark, N. J. A popular make of full-revolving shovel first tackled the job, and gave it up. This Bay City machine, owned by Hugh F. Gilligan Sons Co. of Newark, plowed right through, without previous drilling or chipping. The daily yardage averaged 200' by 20' wide.

An Investment You'll Always Be Proud of



$\frac{3}{4}$ yd. Skimmer

BAY CITY DREDGE WORKS

New York Office: 302 Broadway

**DREDGES
POWER SHOVELS
CRANES**

BAY CITY, MICH.

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you,

Great power

Low maintenance cost

Long life

Quick reverse

Simple construction

All these desirable qualities are embodied in the New Iroquois Tandem Roller. It is because of them that the Iroquois is so universally used for rolling asphalt, brick, macadam, wood blocks, new grades and golf links—that it is standard equipment of successful contractors—that it is used exclusively by large municipalities everywhere.

Iroquois Tandem Rollers are a part of the famous Iroquois Line of street and road-building machinery developed and tested through forty years of service.

We will gladly send you complete specifications of the Iroquois Tandem Roller—or full information regarding the entire Iroquois Line, if desired. Write us today.

Engine side of the new Iroquois Tandem Roller showing accessibility of all moving parts and simplicity of construction.

Iroquois Sales Department

THE BARBER ASPHALT COMPANY

Philadelphia

New York
St. Louis

Chicago
Kansas City

Pittsburgh
San Francisco



2½ and 3-ton sizes with hand-steering wheel
5, 6, 8, and 10-ton with steam-power steering or hand-steering wheel

When writing to advertisers, please mention the Contractors' & Engineers' Monthly—Thank you.

